



SATURDAY, MAY 31, 1873.

Wiswell's Construction and Ballast Car.

We give this week an engraving of a new dump car, intended for construction and ballasting purposes. The car can also be used for coal, and, if required, as an ordinary platform or gondola car. Its construction will be readily understood from the engraving.

The floor is composed of two series of openings or trap doors, one of which is shown open in the cut, the other being closed. To the under side of each trap door a short lever is bolted, which is connected with a long bar immediately under the middle of the doors. To one end of each bar a chain and winding staff is connected, similar to an ordinary brake chain and staff. When the chain is wound up the doors form a level floor, on which the load is placed. When the car is to be unloaded, the operator takes hold of the hand wheel, trips the catch with his foot, and lets the wheel go, and the weight of the load will open the doors. The chutes and wheel-guards under the car are so arranged that about one-half the load will fall between the rails, the balance outside, thus leaving it where it is most required in ballasting, and saving much shoveling. The arrangement of the chutes is such as to drop the material clear of the rails. The doors are closed by simply winding up the chain on the staff. Brakes can be put on the same as on any platform car, the brake-staff being put on the end opposite to the winding-staff.

The inventor claims that this car will cost but little more than an ordinary platform car, and less than the same carrying capacity of rocker cars. Mr. F. A. Wiswell, whose address is Beebe Plain, Orleans County, Vermont, is the general agent for these cars.

Passenger House at Westerly, R. I.

A correspondent sends us the following description of the passenger station of the Stonington & Providence Railroad at Westerly, R. I.:

"The station house at Westerly, a sketch of the ground plan of which I send, has several features (new to me) that the readers of the GAZETTE may be interested in.

"The building, 60x30 feet, has about a one-half pitch roof, and another roof of same height and pitch crossing it at the center, which latter is over the offices shown in the plan. The interior of the building is open and hard-finished to the ridge, while a window in each of the four gables, besides those shown in the plan, makes it very light.

"The posts are about 15 feet high, while the offices are about 10 feet high. At each end of the building and in the ticket office are deep bay windows, the last of which gives the agent a good view of the track and platforms. In the waiting-rooms the window-ledges make a very convenient place on which to deposit hand parcels.

"Under the offices is a cellar, about nine feet high, containing a furnace, fitted with one of Tingley's heat governors, that can be operated from the ticket office; a coal-bin and a force pump, by which water is pumped to a tank over the water-closets, to supply them and the two wash-basins shown in the plan, over which are drinking faucets.

"The water-closets are so arranged that the basins are flushed by opening the door—a very useful appliance when the people are not acquainted with hydraulic fixtures. And all doors are furnished with a peculiar door-spring, which ingenious contrivance exerts as great a pull on the door when it is only open an inch as when it is wide open.

"The plan of having the interior of the building open gives a spacious, airy effect, and all through the interior the comfort and convenience of the public seem to have been studied, even to putting a rocking-chair for the infirm in the waiting-rooms, while the station agent, who, I regret to say, is in some places a surly brute, here is attentive and polite. The outside of the building is, I regret to say, aesthetically a failure. The platform is inconveniently narrow, and the baggage-room, with two doors opening into it, is overpowered by two Saratoga trunks.

"The entire cost of this station, not including land, was about \$3,700."

An Old Invention.

From a paper on the locomotive engine, by Joseph Harrison, Jr., read before the members of the Franklin Institute of Pennsylvania, February 21, 1872, is taken the following paragraph: "The engineer, noting the curious things in bronze and in copper exhibited at Pompeii and gathered together in the Museo Borbonico at Naples, will linger near a small vessel for heating water, little more than a foot high, in which are combined nearly all the principles involved in the modern vertical steam boiler—fire-box, smoke-flue through the top, and fire-door at the side, all complete; and strange to say, this little thing has a water-grate made of small tubes crossing the fire-box at the bottom, an idea that has been patented twenty times over, in one shape or another, within the period of the history of the steam engine."

Railway Association of America.

We complete the publication of the reports rendered at the meeting of this Association, May 14 and 15 last, by the following, which is the report of the Committee on the Best Method of Dispatching Trains by Telegraph:

REPORT ON TRAIN DISPATCHING.

Your Committee regret that they are not in a position to make a final report, or as full a one as they could wish and as they had hoped to present to this convention. The subject detailed to them is one of the greatest importance in railroad management, and should not be dealt with hastily or lightly. It is also a subject which admits of much theoretical discussion and of so many different opinions that no satisfactory conclusions can be arrived at except through practical tests.

Your Committee addressed to 200 of the most important roads of the United States and Canada a circular embodying 20 questions and asking for returns of collisions, showing the causes leading to them.

They regret to say that these circulars have not met the attention they deserved; comparatively few have been returned, although reminders were issued. Those that did come back arrived so late as to cause a hurriedness in the preparation of

equal to the requirements of a light traffic; a heavier traffic might develop a necessity for a different system, when, doubtless, some plan would arise sufficient for any exigency of the road; one only thought there ought to be a better system.

Here out of 44 managing officers, 43 consider their system good enough, and only one desires something better.

A sad, stern answer to the forty-three, an answer that admits of no debate, of no cavil, is, that during the twelve months ending February 28 last there occurred in the United States and Canada not less than 127 butting collisions (meeting of trains going in opposite directions), causing the death of 31 persons, fatal injury to 23, and more or less seriously hurting 165.

These collisions took place on many different roads; on roads crowded with traffic; on roads with a fair traffic and on roads with a very small traffic; on roads managed by officers that bear reputations known to the whole railroad world, and on roads managed by officers as yet of local fame only.

There is no reason to suppose that the terrible list attached to this report is a complete one. One hundred of the collisions were found recorded in the RAILROAD GAZETTE, the particulars being excerpted from the local press; and, as is well known, many accidents have occurred that have not been mentioned in the newspapers. Several roads have refused to give their lists of casualties, alleging as a reason that the labor of compiling them would be too great. The Committee judge that about 25 per cent. might be safely added to 127 recorded collisions, and then the number will not be ascertained. One hundred and twenty-seven butting collisions in one year, and yet the system under which these accidents were possible does not want any improvement! Surely here there is need for thought and ample room for doubt.

In each case the fault can be traced to one or more individuals who disobeyed some order or neglected some precaution. It may, therefore, be said that the individual was at fault and not the system; but it must be remembered that the system is, or should be, devised to keep a check upon the individual. Human agents can never be infallible, and the very best will sometimes err. The most competent usually may, under certain unforeseen circumstances, become totally incompetent. If these agents never made mistakes, no system would be needed; but as the individual cannot be prevented from doing wrong, a system is

necessary which will reduce the liability to error by inducing regularity and, when error is made, detect the error as soon as made, and prevent serious consequences. A system is good in proportion to the rapidity with which it corrects the mistakes of individuals, and no system can be called cumbersome which absolutely prevents an incipient error from going into operation. Such a system may be expensive, and yet may be more economical than a less perfect and less expensive one. For instance, a system of train working costing say \$50,000 per annum but preventing the possibility of collisions, is much more economical than a system costing \$10,000 per annum, but which permits collisions that cost in damages \$100,000 per annum. The actual first cost of the former system is \$40,000 per annum more, yet it is \$60,000 cheaper in the results. Further, it must be remembered that the system which is most prompt to detect and remedy errors is the safest and most economical to put into the hands of inexperienced or unskillful operators.

In the replies returned to the Committee, there is no description of a system devised to prevent the possibility of errors going on to fatal results. Every road differs in some particulars in regard to train dispatching, but there are some common principles, which may be described thus:

In a central office a man known as the Train Dispatcher receives telegraphic reports of and records the movements of all trains in his division, and his orders must be obeyed, except control over all trains, and his orders must be obeyed, except when palpably they would cause danger. The trains are run by the schedule, or train rules, or, when any train is off time and has lost all rights, or is what is called wild, i. e., having no rights at all, then the dispatcher takes such trains in hand and orders them to move as he sees fit. These orders to trains are sent through a station operator to the conductor and engineer of the train (on some roads to conductor only).

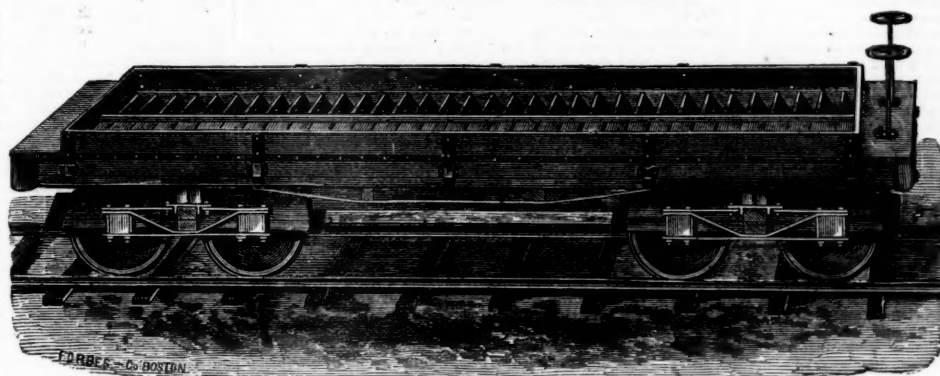
These are the principles of what has been called "the American system of train dispatching," as practiced on nearly every road in the United States and Canada. Although these principles are common, yet each road has a system of its own, differing from the others in details—in the schedule rights given to trains, in the manner of giving and receiving the train orders, and in the matter of checks to avoid the occurrence of errors.

This system has for its aim only the moving of opposing trains along the line, and to fix their meeting points. It does not regulate the relation, one to another, of trains going in the same direction, except when it is necessary to stay the progress of an inferior train for the passage of a superior one.

The advantages claimed for the system are economy, simplicity, and the facility of moving trains along the road, preventing blockades and unnecessary detention of superior trains waiting for inferior ones. That this system is immeasurably superior to the old style of working by

schedule only, under which, to quote an example from the third report of the Massachusetts Commissioners, "A very large proportion of the rolling stock of the Eastern Railroad was rendered unavailable during the week ending 26th August, 1871, when it was most needed, because trains were standing still at points of passing, waiting for other trains that were out of time. The track was perfectly clear for miles, but no orders were received, the road was operated in the dark, and the wheels stood still, to the equal loss and inconvenience of the public and the corporation." That the new system is immeasurably superior to the old one is not to be questioned; but in the face of a record of one hundred and twenty-seven butting collisions, involving great loss of life and immense destruction of property, which the system did not prevent, it becomes a matter of doubt whether safety and economy are characteristics of the system, and it becomes necessary to analyze the record to ascertain in what parts the system is weak and how these parts may be strengthened.

Unfortunately, out of the 100 cases reported in the RAILROAD GAZETTE, causes are not assigned for 61, which is much to be regretted, as for our purpose reliable accounts of the causes leading to these accidents are the only valuable features in the

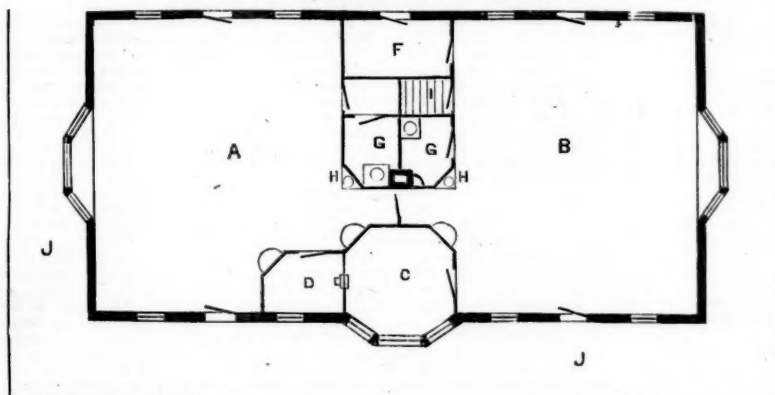


WISWELL'S CONSTRUCTION AND BALLAST CAR.

this report that ought to have been avoided. From the answers given it is evident that in many cases the circulars passed through subordinate hands only, and with a few exceptions it is further evident that the important subject of train dispatching has not yet received that careful study and dissection which are necessary to the attainment of a high state of utility. At the hands of the great roads of the country the circulars have met general neglect. The officers have declined to furnish returns of collisions, although the Committee gave an assurance that such communications would be treated as privileged, and that in the general compilation the names of roads would not be mentioned. These returns would form the most important, if not the only reliable, groundwork of the Committee's report. With a full table they would then be able to point to facts in support of their recommendations and theories. As this is the first attempt at a work of this sort, the Committee do not view the result as disheartening, but rather take courage, from the few approving letters that reached them, to utter the hope that their labors in the past may be the means of stimulating thought on this subject and directing it into proper channels, and that a large number of roads will join together to compare their working and to compile a complete return of accidents on their roads, which volume would be more instructive than the experience of any individual in 1,000 years.

In view of the comparatively small number of circulars returned, and hoping that more will be replied to in a short

PASSENGER HOUSE AT WESTERLY, R. I.



A.—Ladies' Room.
B.—Gentlemen's Room.
C.—Ticket Office.

D.—Telegraph Office.
E.—Slide between offices.
F.—Baggage Room.
G G.—Water Closets.

H H.—Washbasins.
I.—Stairs to Cellar.
J.—Platform.

time, the Committee will not in this report attempt to thoroughly discuss the question of the best method of train dispatching, but will confine themselves to reporting progress and a few desultory remarks.

By kind permission of A. N. Kellogg & Co., the Committee have made use of the list of train accidents published monthly in the RAILROAD GAZETTE since February last year, containing a record of 900 accidents, causing 335 deaths and 1,139 injuries.

Question 16 of the Committee's circular was: "Do you consider any change desirable in the method of train dispatching now in use on your road, with the view to securing greater safety?"

Forty-four circulars were returned. In four, no reply was given to the question; twenty-six replied, "no;" two thought their systems absolutely good—unimprovable; three thought their systems good, and that nothing was necessary but strict discipline; one thought strict discipline and good men would insure safety; four were satisfied with the systems they had got, but would keep pace with improvements adopted elsewhere; one believed that improvements would be introduced, and they would adopt them as soon as found; one could not think of any improvement; one thought the present system

reports. In the remaining 39 cases the causes are stated but vaguely, and but little reliance can be placed on the record, taken as it is from the local newspapers. Of the cases fully reported in the RAILROAD GAZETTE and replies, 31 collisions were caused during 1872 by errors of train-men, running one train on the time of an opposing one. In four cases the conductor forgot the orders he had received. In seven cases the conductor disobeyed the order he received. In seven cases the station operators were to blame. In four cases the dispatchers were in fault. In nine cases the train-men misunderstood their orders. In one case a train was ahead of time. (This might be classed with disobedience of orders.) In one case a train run through a station to shunt back into a side track. In two cases the train-men failed to notice that an opposing train was carrying a flag for a follower. In one case the train-men mistook the number of a train they met at a station, thinking it was the train they were ordered to meet and pass at that station. In four cases collisions occurred while trains were entering stations; they might have been avoided had semaphores been in use.

Of the accidents reported as occurring previous to 1872: In four cases one train was running on time of opposing one. In one case the conductor misunderstood his orders. In one case the conductor disobeyed his orders. In one case the train was 20 minutes ahead of time. In one case the dispatcher was in error. In six cases station operators were to blame.

We might strike out of this list the one case in which the train-men were asleep and ran past the stopping place, and the four cases of collisions when entering stations, as accidents which no system of train-moving could guard against. There are then left 81 collisions that could have been prevented by a good system. In five cases out of 81 the dispatcher was in error. In the American system no check can be devised on the dispatcher; if he make a mistake and do not find it out himself in time, there is no other chance of its being found out. Thus, A and B are opposing trains. B has right of way, which dispatcher desires to transfer to A. The best and safest method is to call up the two stations where orders can be soonest delivered to the trains concerned and transmit the order simultaneously, wording it so that it suits both trains. If B is a schedule train having rights against A, the conductor of the latter should not accept an order giving him the right unless satisfied that B has been notified. In such cases there is a check on the dispatcher, so that if he made a mistake he could be corrected by conductor A. But if B were an irregular train and was on the line without his knowledge, and if the dispatcher gave A an order to proceed, forgetting that B had the road, there is no check on the dispatcher and none can be devised. It is from these irregular trains that danger arises, not from the regular ones; and it is just where the strain is greatest here that the system is weakest. Six per cent. of the collisions were caused by dispatchers.

Going by schedule and time-table rules, the train-men move their trains without any check, so that if the train-men forget that another train has the right of way against them, or if they think they can make the next station in time to clear that train, they go out, and there is no chance of their error being detected. For instance, the conductor and engineer of a train running on New Year's day, on account of the holiday confused it with Sunday, and imagined that a certain passenger train would not be on the line. Again, conductor and engineer having right of way against all except regular trains, forgot that on that day a train would be on the line which ran only three days in the week. They started out and collided. In these cases the train-men made mistakes such as might be made by any class of men at times, and the system did not provide any means of detecting or correcting the error, nor can it be made to do so. Forty-three per cent. of the collisions were caused by errors such as these.

In four cases the conductor forgot the orders he had received. The system admits of a check on the conductor by making the order out in the names of the engineer and conductor both, and holding both responsible, so that if the conductor forgets his order the engineer will remember it. But if after the train is under way, the engineer forgets his order and runs past a station where he should have stopped, the conductor is powerless. Such cases have occurred. The engineer is liable to forget. The system provides no check on this liability. It is true not many accidents arise from this cause, yet one is too many if it can be avoided.

In eight cases the conductors disobeyed the orders they received. Without naming the particulars of disobedience, it is impossible to say how the results might have been prevented.

Holding both engineer and conductor responsible ought to eliminate such chances of accident. On many roads the order is given to the conductors only—a practice not to be commended.

In ten cases the orders were misunderstood. Here again it is impossible to say how they might have been prevented without knowing the particulars of each case. Such misunderstandings ought not to be possible.

In thirteen cases station operators were to blame. The system provides little or no check on the station men. For instance, an operator was ordered to hold a certain train which had not arrived at his station. He replied "Held," but forgot to put out the order signal, so that the train went by. Another one was asked by dispatcher if a certain train had passed his station. He replied "No." On faith of this, the dispatcher ordered an opposing train forward, whereas in fact the train had passed, and a collision ensued. Again, an operator had received an order for a certain train. The conductor of that train came to the office and asked if there was an order for him. The operator thoughtlessly replied "No," and before he recollected the order, the train was gone.

The Committee are not prepared to deal fully with this subject. They prefer to wait until they have collected more facts. In their circular, the Committee requested suggestions for the improvement of the present system of train dispatching. Of the circulars returned, twelve contained no reply to this request. Eighteen could make no suggestions. The remainder contained remarks to the following effect:

Employ first-class men on salaries sufficiently good to prevent their leaving your service at the first opportunity. Trains should be run by time-cards as far as possible, and no special orders issued unless absolutely necessary. There should be a uniformity in train orders, so that conductors and engineers changing roads may be conversant with each and every order they may receive. More attention should be paid to the registering by conductors at junctions. More side tracks and telegraph stations as a rule, so that trains can clear each other with but little delay, according to schedule rules; or, where special order is given by telegraph, the dispatcher can have an understanding from all the parties interested in the change before any train proceeds to make it. Most roads might avoid a good deal of the dispatching now found necessary by a careful adjustment of time cards and giving slower time, particularly to heavy trains. We are anxious to get the most work out of our rolling stock, and consequently make time too short, which renders train-men liable to become nervous and excited and impatient, and they commence to call and clamor for the dispatcher, and the result is, some one or more of them forget some order and disaster follows.

The Committee had hoped to give a minute description, with all their details, of the systems in operation on the chief roads and others, and they requested such descriptions from the officers to whom they sent circulars; but the replies have been so vague as to be worthless for comparison. This contemplated

work must therefore be deferred until the Committee are able to report again.

The most common practice, and the safest one, is to address orders to the conductor and engineer both. Some roads still give the order to conductor only. The use of manifold paper for these orders is not very common as yet, although many roads signify their intention of adopting it immediately. The Cleveland & Pittsburgh Railroad claims to have been the first to introduce the use of the paper. It not only saves time, but it insures the identity of the two orders.

On some roads it is the rule for the conductor to write out his understanding of the order, which is then telegraphed back to the dispatcher, who acknowledges its correctness or otherwise, and the order is not complete until the dispatcher's acknowledgment is telegraphed back and noted on the order. On other roads the order is complete when the operator has recorded it and telegraphed back his understanding of it, so that the conductor is not detained. The remarks (attached) of Mr. J. C. McMullin, of the Chicago & Alton Railroad, on this point are very able.

Question 1.—All telegraph orders for movement of trains are communicated in writing addressed to conductor and engineer (the former by name) of each train.

"If a train has arrived at a station, the conductor's written understanding of the order is secured and transmitted to the dispatcher, who gives his 'O. K.', which is indorsed upon the order before the train leaves."

"If a train has not arrived—as is the case many times every day, where a dispatcher anticipates orders—the operator repeats the order back to the dispatcher precisely as received. If correct, the dispatcher gives his 'O. K.', which is indorsed upon the order, and the operator is held responsible for its delivery, and for securing a perfect understanding of it from the conductor. This understanding is also transmitted to the dispatcher as quickly as possible, but the train does not wait."

"Have had but one case in several years where a conductor gave incorrect understanding and the operator failed to notice it; and in this case the orders were correct as delivered, and the conductor discovered his mistake in time, and acted upon them as they read, and not as he had given his understanding of them. No harm came of it."

"When a dispatcher has a great many trains to handle, it is quite obvious that much time is saved by making the order complete, and holding the operator responsible for its delivery, and for securing correct understanding from the conductors, as against the system of invariably holding a train for the conductor's understanding to be transmitted and dispatcher's 'O. K.' secured, for the reason that a dozen trains might be waiting at as many stations, at the same time, for completion of their orders."

"Another advantage in this system is, in case of interruption to line, all orders that have been given are complete, and trains can act upon them."

"When practicable, orders (for two or more trains) are sent to each train at the same time, but the order to the train having the right of way is always made complete first."

The length of division and the hours allotted to each train dispatcher vary considerably. No general rule can be made applicable, as such matters must be governed entirely by the quantity of work. While on some roads a dispatcher can work twelve hours on a stretch, on others it is found the labor is so severe that six hours' continuous work is the limit. The location of the dispatcher's office as regards his division also varies; some are clear off the division, some are placed centrally.

Question 6 was—"Does every train that stops at a station get a written order before moving on?" This question hardly conveyed the meaning intended. It was not supposed that trains on time would require such an order; but the necessity suggested itself for requiring all trains not on time, and all trains passing a station where the order signal was displayed, to procure a written order. An instance occurred during the year illustrating the desirability of such a plan. A freight train, on a busy road, was stopped at a station by an order signal. It was dark. The conductor started to ascertain if the order was for him, and seeing a man on the platform with a lantern in his hand, took him for the operator and asked him if he had any orders for him. The man spoken to was a tankman, and imagining that the conductor was joking, he replied: "I have no orders for you." The conductor then gave the all-right signal, and the engine and the train went on to meet a passenger express that had already left the next station. Fortunately the train pulled up in time to avoid striking. Here was a case in which everybody acted in good faith. The system was alone to blame, and the seriousness of the error was not mitigated by the fortunate result. What happened there might happen again on any road that permits trains to pass an order signal without a written notification. If there is no order for that train the operator should fill up a form to that effect. Another collision occurred on a Northern road, causing loss of life, which happened in this way: A train was stopped by an order signal, and the operator, mistaking the conductor's number, said: "None for you." The train went on and a collision resulted. These two cases alone show the necessity for some precaution; and, on the other hand, there is not the least reason why the operator should not furnish every train stopped by an order signal with a written notification, addressed to engineer and conductor, that the order is for them, or otherwise.

On the subject of time orders there is a diversity of opinion. Several officers did not give their views regarding it. Of those that did, 19 were in favor of time orders and 19 objected to them as unnecessary and introducing an element of danger, in the liability to misconstruction. Of the 19 in favor of time orders, the majority qualified their opinions by saying, "Safe, if properly given." It is claimed by some that if the order be correctly conveyed to both trains, in the same words, there is no more danger than attends the running by time-card, and that the giving of a time order not only relieves the dispatcher, but makes train-men more prompt in their movements at stations, knowing that idling a few minutes may detain them an hour, and prevents the detention of a superior train by an inferior one. While the time order undoubtedly possesses advantages over the absolute order, the general feeling seems one of mistrust regarding the former—a feeling that its peculiar advantages scarcely compensate for the possibility of error; and in no case is the giving of time orders to trains of equal class practiced.

The opinion is general that trains are run at excessive speed as often as the train-men think they can do it without detection. The American system of train dispatching offers every facility for this, and no road appears to have adopted any special plan of detecting the practice. In the RAILROAD GAZETTE 283 derailments are reported as having occurred in the twelve months ending February 28 last. Of these 108 cases were owing to broken or spreading rails, and 175 were unaccountable. The total 283 probably does not approach near the actual number of derailments that occurred during the year. It is impossible to say how many of the 175 recorded as unaccountable were the result of excessive speed. The Committee would merely remark here that in view of the danger and loss arising from the running of trains at a speed unwarranted by the state and nature of the track, it might be well to devise some plan of effective supervision. There can be little doubt that with the facilities afforded, if not encouraged, by the system of train dispatching, the practice of fast running is too much indulged in.

The Committee in their circular submitted Mr. Alfred Watkins' proposition, which is:

"The true objects to be attained in unimpeachable train signalling are: first, that no train shall be allowed to leave one signal station until that signal station has asked leave from the signal station in advance, and such second signal station

has replied in the affirmative; second, that when the train has been so allowed to leave, the sending station shall inform the receiving station that the train has left, and the receiving station shall acknowledge that he has been so informed; third, that the signals of danger shall not be lowered until this process has been gone through; fourth, that a record, taken down at the moment, shall be kept in each signal office of the time of all signals. These four conditions complied with will secure safety from collision, so far as it can be secured by human agency."

The proposition was received with uniform dissatisfaction. A considerable proportion took no notice of it. The others made objections, as follows:

"It would make too many dispatchers—each station man. It would cause delays, as two or more trains could be ready to leave different stations at same time. Only one operator could use line and could not very well prevent contention of circuit."

—(Atchison, Topeka & Santa Fe.)

"Railroad lines provided with telegraph wires of their own, unembarrassed by commercial business, a set of good operators—not 'plugs'—a line properly constructed and proof against the influence of the elements, would render this plan 'unimpeachable.' In this country it would be a difficult matter to fulfill these conditions. Wires down, what becomes of the system?"

—(Vandalia Line.)

"Not practicable on Western roads."—(Vicksburg & Meridian.)

"Too cumbersome, at least for small roads."—(Marietta & Pittsburgh.)

"Do not think the system of station-to-station dispatching practicable in this country. It would consume too much time; and don't see why it is any more secure against collision than other systems that are more simple."—(St. Paul & Sioux City.)

"Consumes too much time."—(Lackawanna & Bloomsburg.)

"Not practicable with our present system of telegraphs."—(Kansas City, St. Joseph & Council Bluffs.)

"Ordinarily, on a single track not overcrowded with traffic, the American system, if properly used, is satisfactory. The block system tends to greater expense and loss of time. I regard dispatching as an aid to trains, and the block system does away with time-tables to a great extent, or at least trains have more excuse to disregard them."—(Canada Southern.)

"Objectionable on account of a loss of time and the necessity of using additional operating force and employees of experience, who would command a salary that most roads are unable to pay. The risk is much greater when the power of forwarding or holding trains is so distributed."—(Elizabethtown & Paducah.)

"Practicable, but in many cases not desirable. The operators employed would have to be superior to the class now employed at small stations. More operators must be employed. Breakages in the wire or atmospheric disturbances would cause blockades. Operators might make errors. Train-men might not depend upon their own watchfulness so fully as at present, and accidents might result. Loss of time would be quite sure to result; also, we should require an additional wire."—(Cleveland & Pittsburgh.)

"Impracticable, as a rule. Would occupy the whole of one telegraph line. Places the responsibility in too many localities. Prevents the running of fast trains. Would not be any more safe to run trains in this manner than under the present method."—(Atchison & Nebraska.)

"Too slow process. Too much complication, and where there is any business at all there would be delays in operator's calculation for circuit."—(Burlington, Cedar Rapids & Minnesota.)

"Not practicable: that is, unnecessary in any section of the country, unless a large number of trains are run. Objections: Loss of time; and expense without corresponding return."—(Missouri, Kansas & Texas.)

"Only practicable for double track."—(Evansville & Crawfordville.)

"Hardly think it would be practicable on the Great Western of Canada, where so great a number of trains are run on a single line, involving as it must a great deal of struggling between the various stations for the preservation of the circuit. Machinery appears rather too cumbersome for the expeditious handling of a large number of trains. It would no doubt work well on a road having only a limited amount of traffic."—(Great Western, Canada.)

"Do not think it practicable on roads doing an ordinary business, on account of the expense involved; and it cannot be used to advantage on single-track roads. On double-track roads, where the traffic is heavy and trains run often, I should think the plan is a good one. Have never tried the system, however, and therefore cannot give a detailed opinion."—(Hannibal & St. Joseph.)

"Not practicable, on account of loss of time at all stations."—(Milwaukee & Northern.)

"Not practicable. Think one man should handle all trains on his division. By the adoption of that system men must be employed specially for handling trains at each and every station, in addition to the agents, which would not only incur a much greater expense to railroad companies, but would cause a great detention in running of trains."—(Cincinnati, Lafayette & Chicago.)

"Through favoritism to some train-men and ill-feeling to others, station agents might cause serious delays to trains. Better to have one good man to direct the movements of all trains and provide for meeting places than to trust trains to a number of persons."—(Chicago & Michigan Lake Shore.)

"Too complicated, requiring night and day telegraph operators of sufficient experience to act as train regulators, and too expensive without an increase, on the whole, of safety."—(Hartford, Providence & Fishkill.)

"Presume it would work, but regard it as a cumbersome method—not applicable, if indeed practicable, on Western roads. See nothing to be gained by its use, and am doubtful of its efficiency. Think it would render blockades quite frequent in busy times. Would require many additional wires and a high-poised corps of operators at all stations specially for this work, rendering it expensive. It would take the large bulk of responsibility off train-men, which I consider objectionable—very—and put it in the hands of entirely too many station operators."—(Des Moines Valley.)

"The block system is clearly practicable and efficient, as far as human agency ever is, if it is closely supervised and the proper class of men employed; but with boys as operators, without a sense of responsibility and other arrangements to match it, cannot succeed. The expense is the great drawback. The signaling system of the Reading Railroad is an excellent one, but too expensive. We are now preparing to try an automatic system working through the rails, but cannot say how effective it will prove. Its chief merit is that any disarrangement will very properly show a signal of danger, but in any case to be effective it must need close supervision."—(Philadelphia & Baltimore Central.)

"Do not consider it necessary in this Western country, where the greater portion of nearly every road is comparatively straight. Its adoption would involve an immense additional expense in the shape of signal facilities and signal operations. Thus it would create great confusion and dissatisfaction among train employees and cause great delay of trains."—(Chicago & Alton.)

"Consider the system wholly impracticable. First, it would be putting the safety of trains into the hands of too many different persons, some of whom might be incompetent, or might neglect duty. Second, too many cooks spoil the broth. Third, it would involve a great loss of time and cause blockades. Fourth, half a dozen offices would want the circuit at the same time for the same purpose; five of the six must wait or all pitch in and fight it out. Fifth, the telegraph line is liable to

break down, when everything must come to a standstill," etc., etc.—(Chicago & Iowa.)

"Not practicable. It would necessitate the employment of too many men at large salaries, especially for small roads. Believe the correct principle to follow is, follow the time-cards and resort to the movement of trains by telegraph only when compelled to in order to save the loss of time, etc. In so doing will necessitate the train-men's becoming familiar with the time-card."—(Sioux City & St. Paul.)

From these remarks it may be gathered that the principal objections to the proposed system are: that it is cumbersome; that it involves loss of time, and therefore is not adapted to heavy traffic; that it does not insure safety; that it would cause frequent blockades; that it would cause delays; that there would be contentions for circuit—in short, that the system is totally impracticable. To weigh against these opinions there are solid facts, viz., that the system is in actual operation on the Southeastern and the London, Chatham & Dover railways of England, and has been for some time, securing to these roads total immunity from collisions between stations. On the Southeastern Railway in 1869, 70, and '71 60,000,000 passengers were carried without an accident, and the average number of trains at high speeds, through all sorts of crossings, points and junctions, was 700 trains a day. In the three years referred to 750,000 trains were moved without a collision between stations. A system that could produce such results can hardly be called too cumbersome, and there need be little fear of delays and loss of time resulting from it. In India the chief railroads are single-track, and operated under this system, and there the operators and station staff are of a very inferior class, in point of intelligence and sense of responsibility. Yet butting collisions are unheard of in that country. With these facts before us, and also the fact that 127 butting collisions occurred in one year in this country, it would be well to study the Southeastern system well before discarding it. The only valid objection that can be raised against it is its expense. The system requires constant attendance in all the telegraph stations. On roads doing a moderate traffic there are night and day operators under the existing system, so that in that respect the extra expense will be very trifling. The objection urged by some is, that a better class of operators would have to be employed, involving considerable expense. It would, of course, be necessary to have a fair class of intelligence in the telegraph offices, but this system does not require a better class than the existing one. The axiom enunciated in the early part of this report must be remembered: "That the system which is most prompt to detect and remedy errors is the safest and most economical to put into the hands of inexperienced or unskillful operators." Taking the same men in each case, then the better the system the better the results. If the operators now employed are not good enough for the more perfect system, they certainly are not good enough for the more imperfect one. On this head there need be no extra expense. There would have to be a slight extra expenditure for additional wires and battery material. No general estimate can be made of the difference in cost of the two systems. The cost of the existing system varies on the different roads. Each manager should make an estimate of the increased cost, if any, and then decide whether the certainty of safety is worth it. He should calculate the chances of accident on his road, and then decide how much he can afford to pay to still further reduce those chances.

The objection is urged by some that the power of moving trains is placed in too many hands, and that responsibility is placed in too many hands. This feature is the strong point of the system. In it the whole essence of safety lies. If one makes a mistake he is certain to be corrected by one of the others. The responsibility is, it is true, placed in many localities, but not weakened; instead of one being held responsible, two are, and instead of two, three are, and so on; but the responsibility is not weakened. It falls with full force on each one connected with moving the trains, each one being directly responsible in his own sphere.

The weak point of the American system is that important movements are entrusted to the hands of single individuals, or to two persons similarly circumstanced (for example, conductor and engine-man), so that if they blunder, the error goes on to result without chance of detection. The objection that there would be continual quarreling for circuit is raised by those who forget that the circuit would have to be from station to station. Very rarely indeed, if ever, would atmospheric disturbances prevent stations from communicating with each other. If, however, such interruption were to happen, trains would be in no worse plight than under the existing systems: they would have to fall back on time-card rules. Difficulty might at first be experienced from the quarreling of stations, each station being, of course, anxious to send its train off first, so as to clear its sidings; but a little discipline and a definition of the rights of trains would put a stop to such annoyances. All these difficulties were, no doubt, encountered when the system was put first into operation on the Southeastern, but as more than 750,000 trains have been moved without accident, it is but fair to presume that the obstacles were overcome, and that as 700 trains is the daily average, the system has not proved cumbersome, nor has it caused much delay. It is true the Southeastern is a double-track road, but the India roads are single-track, and have worked for many years without collisions. Its introduction in this country must be a mere question of expense, not of efficiency or desirability, and that question must be settled by the railroad companies individually. The system is, so to speak, elastic; that is, it may be made to suit different degrees of traffic, principally by regulating the distances between telegraph stations. Where the trains run close together, the telegraph stations must be close together; where the trains are few, the telegraph stations may be far apart. For instance, the system can be worked perfectly where every second stopping place is a telegraph office, in which case trains, when necessary, can be given orders to meet and pass at the intermediate station or siding. This system must not be confounded with the "block" system that has been abandoned on some English lines, and was partly condemned by Captain Tyler. The Massachusetts Commissioners apparently fell into this error, for in their third report, page 140, they say: "The Southeastern and the London, Chatham & Dover, for instance, operating 466 miles, worked throughout on the telegraph block system, met with no train accident in 1870; while the London & Northwestern, worked for a small portion only of its 1,427 miles on a block, had no less than 34 train accidents which required investigation during the same year." The Southeastern and the London, Chatham & Dover are the only roads in England worked under the plan described by Mr. Watkins, which he calls the "absolute block system" while the London & Northwestern is operated under what he calls the "permissive block system—neither one thing nor the other." The absolute block system provides for a repetition of messages between the two stations regarding each train, and that the train shall not pass until those messages are complete, and on a double track not until the interval is clear, so that, if one operator is negligent, delay will result to the train, which is certain to bring the party in fault prominently forward. Again, if one of the operators make a mistake regarding the train, there is almost a certainty of its being rectified immediately; that is, as great a certainty as is possible where human agents are employed. A great advantage is that the train orders and messages are uniform; in transmitting them over the wire they can be expressed in formulae or signs, all except the number and description of the train, so that the actual transmission of messages occupies but a short time, and there is no chance of misunderstanding. It is not necessary for trains to stop more frequently than under the American system, the permission to

pass being given by signals. The system does not, as some have supposed, supersede the time-table, although it might render train-men less careful to keep on time, from the greater sense of security when off time, but that is a matter easily regulated by the superintending officers.

The Committee express the hope that as the results obtained under this system on two double-track railroads doing an enormous business, and on single-track roads doing a large business, have been so satisfactory, some managers in this country may decide to give it a trial, if only on part of a road.

The Committee also recommend that an effort be made by this Association to induce as large a number of railroad managers as possible to agree to furnish quarterly or monthly returns of accidents to the Secretary; that the Secretary be instructed to compile and classify them, and furnish each road in the compact with a copy, and that the communications be held as privileged, no person being allowed to have access to them, and that no copy of the report be furnished to any person not in the compact.

The Committee hope at the next convention to present a complete report, and to recommend a system of dispatching, on the plan of the American system, that shall be free from as many objections as possible.

A copy of instructions to conductors, engineers and operators, regarding special orders by telegraph, in use on the Marietta & Pittsburgh Railroad, is attached. This is the only road known to the Committee on which there has been any attempt to collate such instructions. On other roads the rules are scattered through time-tables, special orders and unexpressed.

Since writing the above report, a number of circulars have been returned, and more have been promised.

The Marietta & Pittsburgh Railroad's instructions concerning special orders by telegraph, referred to above, are as follows:

INSTRUCTIONS TO CONDUCTORS, ENGINEERS AND TELEGRAPH OPERATORS.

1. The greatest care and vigilance must be exercised in the receipt and use of special train orders by telegraph. Whenever trains are passed over the road otherwise than as provided in the schedule, it becomes of vital importance that all the trains concerned should fully understand the orders.

2. Hereafter a green flag by day and a green light by night, displayed at a telegraph office, will signify "stop for orders," and no excuse will be taken from any conductor or engineer who runs by these signals without stopping. Operators will see that the signals are prominently displayed and observe that cars on sidings do not obstruct the view, and whenever practicable they will stand near the signals as trains approach. It will be the duty of operators to know that engineers observe the signals, and they will not be excusable for the flag blowing down or the light becoming extinguished. Operators should remember that this may be a matter of life and death, and leave nothing undone to insure safety. The absence of signals at a telegraph station will not excuse conductors from observance of rule No. 12 of train orders, wherein they are required to inquire of every operator if any orders have been received for them.

3. Upon receipt of a special order by telegraph, the operator will read it aloud to conductor and engineer, who will, if they understand it, affix their names to it, and the operator will repeat it back to the train dispatcher addressed to "A. J. W." and prefaced with the signal 32 (1 or we understand). If the understanding of the conductor and engineer is right, the dispatcher will respond "correct," and also give the correct time as indicated by the standard clock, which the operator will write upon the order and affix his own name beneath it. The operator will then make a copy for conductor and engineer each, and file away the original. Conductor and engineer will see that their copies agree with the original.

4. No order is of any value without the word "correct" written upon it, and operators will under no circumstances deliver orders until dispatcher authorizes them to indorse them so correct. In order to save time and allow the operator to get copies ready, the dispatcher may send an order a short time before it is intended to go into effect, as he may desire to have an understanding from another conductor in the meantime. Hence the word "correct" is of very great importance. A simple "O. K." to what the operator repeats back is not sufficient; wait for the word "correct."

5. An order to run to a certain point to meet and pass another train makes that place a definite meeting point, and neither train must go beyond there until both have arrived. If this passing point is not a telegraph station, and one of the trains fail to arrive within a reasonable time, a man from the other should be sent to the nearest telegraph office (always *forward*, so that he can be picked up if the train comes along); but the train to which he belongs must not be moved from the passing point without further orders.

6. A special order is never to be considered to mean anything but what it plainly expresses. An order to run regardless of a certain train refers to that train only. An order to meet and pass another train at a given point gives no right whatever against any other trains coming or passing. Telegraph orders must be carried out implicitly so far as they relate to the trains named in them; but all other trains must be met and passed according to schedule.

7. Engineers must not leave telegraph stations without first knowing that conductors are on the trains. Signals by bell-cord and lantern will not be respected unless the engineer knows to a certainty that they have been given by the conductor.

8. Assume nothing. In case of accident take the safe side. Ask for explanation on anything not fully understood.

A. J. WARNER, President.

R. B. HOOVER, Train Dispatcher.

ANNUAL REPORTS.

South Carolina.

This company owns a line from Charleston, S. C., to Augusta, Ga., 137 miles, with branches from Branchville to Columbia, 68 miles, and from Kingsville to Camden, 38 miles, making a total length of road operated of 243 miles. The operations for the year 1872 were as follows:

Earnings:	
Passengers.....	\$268,063
Freight.....	1,110,148
Mails and miscellaneous.....	23,000
Gross earnings (\$5,766 per mile).....	\$1,401,211
Expenses:	
Maintenance of way.....	\$27,499
Motive power.....	214,267
Maintenance of cars.....	71,476
Conducting transportation.....	296,886
General expenses.....	45,878
	856,106
Net earnings (\$2,243 per mile).....	\$545,105
Receipts from investments.....	14,101
	\$559,206
Interest and exchange, sterling bonds.....	\$92,505
Interest on domestic bonds.....	60,340
Interest, bills payable, etc.....	264,979
	417,824
Balance.....	\$141,382
The expenses were 61 per cent. of receipts. The gross earn-	

ings show an increase of \$55,561, or 44 per cent., and the net earnings an increase of \$80,314, or 174 per cent., over the previous year. During the year 92,024 first-class and 115,520 second-class passengers were carried, a total of 207,544, equal to 8,538,028 carried over one mile. The freight hauled eastward was 181,076 tons, and westward 135,631 tons, a total of 266,707 tons, or 30,457,782 tons carried one mile. The principal items of freight were 264,625 bales cotton, 30,150 barrels of flour, 105,952 bushels grain, 37,671 barrels naval stores, and 15,094 head of stock. The locomotive mileage was: passenger, 181,987; freight, 530,075; switching and distributing, 141,670; total, 856,732 miles.

The capital stock is \$5,819,275; sterling bonds, \$1,492,738; domestic or currency bonds, \$3,227,608; a total fixed capital account of \$10,539,621, or \$43,373 per mile. A large portion of the currency bonds is nearly due. The bills payable, other liabilities and floating debt amount to \$1,238,496. To meet these demands second-mortgage bonds have been issued to the amount of \$3,000,000, bearing 7 per cent. interest, and having 30 years to run. These are offered for sale to the holders of the domestic bonds at 75, payable one-third in money and two-thirds in bonds. The cash receipts are to be used to reduce the floating debt.

Camden & Atlantic.

This company's road extends from Camden, N. J., southeast to Atlantic City, 60 miles, with a leased branch from Egg Harbor City to May's Landing, 7 miles, making 67 miles in all. The May's Landing Branch was opened May 1, making the average mileage for the year 64 miles.

The statement for the year 1872 is as follows:

Earnings:	
Passenger.....	\$338,029
Freight.....	112,454
Express.....	24,219
Ferry.....	36,773
May's Landing Branch.....	2,349
Mail.....	3,000
Other sources.....	1,259
Gross earnings (\$7,297 per mile).....	\$467,035
Expenses:	
Operating road.....	\$197,102
Ferry.....	51,523
May's Landing Branch.....	6,250
Taxes, car-hire, etc.....	9,438
	264,313
Net earnings (\$3,167 per mile).....	\$202,699
Interest, insurance and legal expenses.....	\$25,538
Interest on bonds.....	76,360
Dividend on preferred stock.....	29,300
	131,217
Surplus undivided.....	\$71,482

During the year 169,018 passengers and 43,977 tons of freight were carried. The expenses were 56 per cent. of gross receipts. The ferry from Philadelphia to Camden was purchased in January, 1872. During the year the first-mortgage bonds were extended for 20 years and the interest made payable in gold.

The largest part of the business is the summer travel between Philadelphia and the summer resort of Atlantic City, but there is a large local business.

Panama.

This company's road extends from Aspinwall, New Grenada, to Panama, a distance of 47½ miles. The company makes the following statement of its operations for the year 1872:

Earnings:	
Passengers.....	\$160,000 00
Freight.....	1,463,019 96
Other sources.....	95,660 04
Gross earnings (\$36,183 per mile).....	\$1,718,680 00
Operating expenses (2¼ per cent.).....	486,077 62
Net earnings (\$25,930 per mile).....	\$1,232,602 38
Interest on funded debt.....	\$243,169 68
Dividends (10½ per cent.).....	735,000 00
Other payments.....	251,565 78
	1,229,755 46
Surplus.....	\$2,846 92

The equipment of the road consists of 20 locomotives, 26 passenger, 4 baggage, mail and express, 226 box, 82 platform, 4 stock, 15 coal and 159 construction, road and service cars. The capital stock is \$7,000,000 and the funded debt \$2,993,177.50, making a total capital account of \$9,993,177.50, or \$210,383 per mile. The cost of the road to December 31, 1872, is reported at \$10,000,000; the cost of equipment, real estate, and materials and fuel on hand at \$2,675,000. The bonds are provided for by a sinking fund which will be sufficient to retire them at maturity.

Columbus & Hooking Valley.

This company owns a road from Columbus, O., southeast to Athens, 76 miles, with a branch from Logan to New Straitsville, 13 miles, making 89 miles in all.

The operations for the year 1872 were as follows:

Earnings from:	
Passengers.....	\$113,076 77
Freight.....	721,314 97
Express and mail.....	8,847 50
Telegraph.....	921 10
Miscellaneous.....	5,57 48
Mileage.....	2,163 43
Gross earnings (\$9,606 per mile).....	\$854,892 45
Expenses for:	
General operating expenses.....	\$211,012 50
Repairs of road.....	140,348 24
Locomotive and car expenses.....	58,263 88
Loss and damage.....	2,710 25
Total expenses (48.22 per cent.).....	\$412,339 67
Net earnings (\$5,603 per mile).....	\$442,662 78
Interest on bonds.....	\$151,333 39
Dividend, March 4, 1872, on all business prior to 1872.....	189,500 00
Dividend, July 1, 1872, on first half of 1872.....	56,730 00
	397,563 39
Balance.....	\$45,099 39
Balance from 1871.....	285,118 47
Net balance to credit of income account.....	\$330,218 26

As compared with the previous year there is an increase of 5½ per cent. in gross earnings; an increase of 56 per cent. in expenses; and an increase of 54 per cent. in net earnings. During the year 134,999 passengers were carried. The principal items of freight were coal, of which 540,075 tons were carried, and pig iron, of which 11,881 tons were carried.

During the year four miles of new sidings have been laid and three permanent bridges of 75 feet span each put up to replace temporary structures, and 1,020 tons of steel rails put in the track. Six locomotives, three cabooses, 25 flat and 467 coal cars have been added to the equipment, which now consists of 25 locomotives, 8 passenger, 1 combination, 3 baggage, 11 caboose, 60 box, 75 flat and 957 eight-wheel coal cars. Private parties have 459 eight-wheel and 100 four-wheel coal cars on the road. The amount expended for new equipment was \$413,440.98. The total mileage of locomotives for the year was 499,582, the mileage of passenger-train cars was 315,508, and of freight cars, 6,782,101.



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Editorial Announcements.

Removals.—The Chicago office of the RAILROAD GAZETTE has been removed to No. 71 Jackson street, opposite Third avenue. The New York office of the RAILROAD GAZETTE is removed to Room 131, No. 73 Broadway, opposite the upper elevator landing.

Correspondence.—We cordially invite the co-operation of the railroad public in affording us the material for a thorough and worthy railroad paper. Railroad news, annual reports, notices of appointments, resignations, etc., and information concerning improvements will be gratefully received. We make it our business to inform the public concerning the progress of new lines, and are always glad to receive news of them.

Articles.—We desire articles relating to railroads, and, if acceptable, will pay liberally for them. Articles concerning railroad management, engineering, rolling stock and machinery, by men practically acquainted with these subjects, are especially desired.

Inventions.—No charge is made for publishing descriptions of what we consider important and interesting improvements in railroad machinery, rolling stock, etc.; but when engravings are necessary the inventor must supply them.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

UNSAFE BRIDGES.

Mr. A. D. Briggs, the principal member of the firm of A. D. Briggs & Co., of Springfield, Mass., has written two letters to the *Republican* of that city, regarding the safety of the "Truesdell" bridge, which, it will be remembered, was the plan of the Dixon bridge, the falling of which caused the recent disaster in that place. The firm of which Mr. Briggs is a member have built a great many bridges of that plan, and therefore, quite naturally, he is concerned regarding the reputation of structures of that kind. We regret that we have not the space for the whole of his letters, but think the following summary will give the substance of their most important statements. In the first letter, Mr. Briggs says the bridge was built in five spans of 133 feet each, with a carriage roadway, 18 feet, and a sidewalk on each side five feet wide. The "builder says" the bridge was tested when it was completed with a load of 90 tons upon each span, which is probably ten times as much as the load under which "it is said" to have failed. A photograph taken at the time of the celebration of its completion represents it covered with carriages and a great multitude of people, and yet the fact, "as stated," exists that with 150 people upon a span both of the end spans fell. "That these facts (?) are calculated and ought to weaken confidence in iron structures all must admit" (?), but do not prove that the Truesdell bridge is constructed on a faulty or unsafe principle. But two of them have, to the knowledge of Mr. Briggs, thus far failed. Mr. Truesdell has built 15, and Mr. Briggs' firm 40 bridges of this plan, all of which, so far as known, are in good condition. The failure of bridges built on other plans has been reported, but has attracted less attention because the loss of life was not so great. Unsafe bridges can be built of any plan if an insufficient quantity or poor quality of materials is used, or if carelessly or unskillfully constructed. A number of bridges mentioned by Mr. Briggs bear witness to the safety, security and beauty of the Truesdell bridge, which Mr. Briggs believes, when properly built, has no superior for the purposes for which it has been used.

The second letter is chiefly a reply to several articles which have appeared in the *New York Tribune*. In regard to the science of bridge building, and the accuracy

with which the strains upon the various members and parts of a bridge can be calculated, Mr. Briggs says:

"There is no subject in mechanical industry in regard to which there exists such a diversity of opinion among educated men. All engineers will agree that certain members of a truss, such as chords, the lower of which are in tension and the upper in compression, and certain other members, such as braces or posts, to keep the chords apart, and ties to hold them together, are indispensable; but beyond this scarcely two members of the profession agree about anything, except to disagree. Beyond this, so far as the arrangement and the form of the different parts of a truss, and the best material from which to make the parts which resist a compressive strain, there are many men of many minds."

"So far as the details of the construction are concerned, and even in principles of construction, they differ widely from each other."

"So long as reliable men, men of science and skill, continue to recommend bridges upon a score of radically different plans and combinations, it need not and ought not to be expected that any one patent or plan will secure a monopoly of the business."

We believe few will read Mr. Briggs' letters without being impressed with the calm and impartial tone in which they are written, yet we feel compelled to dissent from some of the assertions and inferences contained in them. We do this, too, with some hesitation, knowing how extensive has been his experience and opportunities for knowing all about the subject which he has made a specialty. Nevertheless the importance of it is so great, and human life and safety so dependent upon the strength of our bridges, that we feel compelled to call attention to those points about which we find reason to differ with him.

While it is quite true that, "regarding the arrangement and form of the different parts, there is great difference of opinion among engineers," we believe that this is true of what the law books call *mere form* and not of the "principles of construction," if by the latter are meant the arrangement and proportion of parts of such structures which is necessary to give them the requisite strength to sustain the maximum load they may be obliged to carry. It is no more reasonable to infer that the strength of bridges cannot be calculated, because engineers disagree on certain points, than it would be that we cannot know whether it is right or wrong to lie, steal, or cheat our neighbors, because the Christian sects disagree about sundry doctrines. The fact is that good people and good engineers do in their respective callings agree on certain general principles, which must be observed to insure the salvation of the soul in the one case, and the safety of the body in the other. Regarding bridge construction, we believe all competent engineers will agree

1st. That all bridges should be proportioned to sustain the maximum load which they may be obliged to carry.

2d. The proportions of the parts should be determined by calculating the greatest strains to which any load not exceeding the maximum may subject them.

3d. No parts of an iron bridge should ever be subject to a strain of tension or compression greater than one-fourth of its ultimate strength.

The charge which is made against the "Truesdell" and some other plans of bridges is that they are not proportioned to sustain the maximum load which they may be obliged to carry, and that the strength of their parts is not calculated accordingly, and that the material is subjected to strains greater than one-fourth of its ultimate strength. It has also been said that the form of the "Truesdell" bridge is such that it is impossible or difficult to calculate the strains which its different members must bear. Now if these charges are not true, great injustice has been done to both Mr. Truesdell and Mr. Briggs.

If untrue they can, however, be easily disproved by furnishing a diagram of strains with the method of calculating them, and the dimensions of the parts of a bridge such as these gentlemen have built. If either of them will do this we will take great pleasure in publishing it. This will furnish the data for a demonstration of the strength of a structure of that plan which will be as conclusive as mathematics. If, however, such proof cannot be furnished, that is, if the strains to which such a bridge is subjected cannot be calculated, then it is a fatal objection to the plan; because there are a great many plans of which the strains can be determined in this way.

To raise suspicion of the safety of all iron bridges—as Mr. Briggs does—because the one at Dixon failed with a less load on it than it was subjected to when it was tested in 1868, is not only illogical but unscientific: illogical because it has not been proved that the failure was due to any inexplicable defect in the materials, and unscientific because it does not recognize the fact that iron repeatedly subjected to strains greater than the limits of elasticity gradually but certainly grows weaker.

Mr. Briggs also says, that out of 55 bridges of the Truesdell plan, only two have broken down, whereas during the same period there have been more failures of bridges of other patterns, and infers that therefore "no plan invented is superior to the Truesdell patent," which is a rather sweeping inference.

It is quite true that bridges made of any plan, if constructed of insufficient material or of a poor quality, will be dangerous, and what we have said may be applied to all bridges. Tested by the standards which have been suggested, we fear many common road bridges would be found to have so little strength as to be dangerous. This is especially true of several classes of bow-string girders, of which there are many examples in the New England, Middle and Western States. There are several such in Boston, some of them in positions where a dense crowd is liable to collect at any time.

A number of gentlemen in St. Louis, including Capt. James B. Eads, engineer of the great bridge over the Mississippi at that place, have petitioned the County Court of St. Louis "to create such a law as will oblige all bidders bidding upon the bridge contracts of this county to furnish with their proposal, 'diagrams of strains' consisting of skeleton plans and elevation of their bridge, having plainly lettered or written upon them the different strains to which each piece in the bridge is subjected under the maximum load, and the size of the material used to resist these strains, the weight of their bridge in full, the load in full, a guarantee that their material shall be of a certain comparative quality (any piece of a set to be taken and tried by the engineer in charge), and a model or drawing, showing the mode of making the various connections between the chords and webs and minor parts of the structure."

At the recent convention of the American Society of Civil Engineers, a committee was appointed "to report at the next annual convention upon the most practicable means of averting such accidents as the falling of the bridge at Dixon." The names of the committee are given in another column. A carefully prepared report and presentation of the subject from the committee will, doubtless, do much good.

Since writing the above, we have received a copy of Mr. Truesdell's explanation and defense, published in the *Springfield Republican*. Before it was received, however, we learned that we were misinformed regarding the falling of a bridge at Rockford, Ill. Our information was received from a source which we regarded as reliable, but we have since learned it was a mistake. This we regret very much, and we trust our denial of the report may undo any evil it may have caused.

In Mr. Truesdell's letter he gives some dimensions of the Dixon bridge, which are too indefinite to serve as data from which to calculate the strength of the trusses. He says the trusses were "13 feet from center to center," and "the bottom chord, including first and second, contained 16 square inches of iron." It is not clear whether he means that the trusses were 13 feet deep measuring from the center of the top to the center of the bottom chord, nor whether each of the bottom chords of each truss contained 16 square inches of metal, or whether the two combined contained that amount. What is meant by the first and second bottom chords is also not clear. It would also have been more satisfactory if he had stated in square inches of section the amount of metal in the top chord, which he says had sufficient strength to resist a force of compression of over 800,000 pounds. His statement that the wrought iron for this bridge "was warranted to sustain a tensile strain of 80,000 pounds per square inch; and from tests made from bars taken promiscuously from the same, each was found capable of resisting over 80,000 pounds," is so plain that there is no mistaking it; and the only inference is that either it is a misprint—which would be the charitable construction—or else it is a blunder of the very worst kind. If Mr. Truesdell can get iron which will resist over 80,000 pounds of tensile strength per square inch of section, doubtless many bridge-builders would like to learn who the manufacturers are. Most of them find it impossible to buy iron which will stand 60,000 pounds.

It is not our purpose in what we have written to increase the bitterness and sorrow which doubtless the builders of this bridge must feel, our only wish being to call attention to what we conceive to be dangerous defects in bridge construction, and thus avert if possible the recurrence of similar accidents in future.

Applicants for Passes.

We have had the opportunity to see a collection of letters written in application for passes from a railroad, of which we will only say that it is a great way off, and certainly not any one that readers may think it to be. Doubtless if we could print them verbatim, they would be vastly more interesting than anything we could say of them; but that would be too personal. They come from men (and women) of many occupations, from a seamstress to a colonel in the United States Army, and give all sorts of pretexts for the asking. We may divide them generally into clerical, charitable, official, and journalistic.

In this collection the clerical are most numerous, and some of them are very funny, and some very despicable.

Some of them are only remarkable for their oddity, as they ask only for what the railroad company has made it a rule to give. Here, for instance, is a letter from a brother whose piety and zeal, it is to be hoped, exceed his learning:

— gan. 23th, 1873.
 "Superintendent of ——— Railroad.
 "Sir My appoint ment is at ——— and ——— [names of three towns, all spelled wrong] Will you please to Send Me a half far pass for this year
 "and May the blesens of god attend your labers
 "——— Minister."

Now we believe that the Alaska & Patagonia Railroad (we didn't intend to let its name slip out) has done as other railroads do, and made it a rule to let ministers of the gospel settled in churches on its line ride on the road at half price, apparently as its share in the work of spreading the gospel. But see what it leads to. The individual is expected to aid only the clergyman of his own church, or those which he approves, but the corporation is supposed to know no creed, but to give to all alike, Catholic and Protestant, orthodox and radical. Just think what a strain it must be on the conscience of the "Superintendent" aforesaid, being, we will say, a Hard-shell Baptist, to encourage the servants of the Scarlet Woman, or those who would abolish hell, by giving them opportunities to scatter their doctrines broadcast. And, granting the shareholders to be liberal-minded, men without religious prejudices, must, O must they help to support a minister who spells God with a little g?

Our next specimen is also a clergyman, a superannuated one, apparently, who relates his services in his church, and says that he is still trying to do something for his Master and wants a half-fare pass. Being a Baptist, he puts in a word for the new translation of the Bible by the American Bible Union, and shows his regard for the officer to whom he applies by sending a copy of its translation of Genesis.

Another minister, whose duties call him to a great many churches in the country through which the road runs, wants a pass for himself and his wife. He seems to distrust his clerical claims, and besides he prefers not to pay for half-fare tickets, as clergymen usually do, so he adds:

"I have been correspondent for various papers, and have given yours and other railroads many notices; and having been appointed editor also at our last conference, I will have additional occasion to travel and write. I trust it would be no disadvantage for you to give me and my wife a free pass, as some other roads have and are doing. But of course you know your own regulations best.

"I send you herewith a notice of mine, published to-day of your road."

So the applicant seems to have paid in advance (in his own currency) for the passes which he perhaps didn't get after all. The "notice" certainly was worth all it called for—at least it ought to be worth an annual pass on any road in Christendom to write such an unmitigated puff, whether or no it is worth anything to the railroad. But he was not satisfied with this evidence of his skill, and inclosed another and a longer notice to another and a rival rail ad. So honors were even. The passengers whom the Elder may have drawn to the Alaska & Patagonia road by one letter, must be balanced by those whom he drew from it by his laudations of the Patagonia & Alaska Railroad. And what can be thought of the editor of a religious newspaper who offers the use of its editorial pages as payment for passes for himself and wife?

Now comes a missionary who wants a half-fare ticket, "unless you feel inclined to favor us, as many other roads are doing, by extending a complimentary free pass. I travel only as a gospel minister, holding missionary conventions, and looking after the interests of churches. I am also a correspondent of the press, and endeavor to give an equivalent for free passes in paper currency."

A sample of his "paper currency" accompanies the letter. It is worth quoting from.

Beginning with a description of meetings held in some places by the worthy brother, he says:

"At the evening meeting, standing room could hardly be found to accommodate the comers. Brother ——— was weary with the press of previous meetings, but his soul kindled over the people he had recently left, and his account led his hearers to marvel at the results granted by our wonder-working God.
 "Hurrying to the train, a comfortable berth in Pullman's palace car furnished rest for our weary bodies. The smooth track of the ——— Railroad and flying train rather courted sleep. By the way, this is one of the best roads and most popular lines to ———. Over fourteen years ago the cars were running to ——— and eight years ago, when Mr. A ——— was elected Superintendent, the road was only finished to ———, and running miserable coaches on slow time. A ———, Esq., strongly backed by his assistant, pushed it through to ——— and has made the ——— route more than a peer of the other and earlier lines," etc.

How accomplished and versatile is this laborer in the vineyard, who makes the transition from "the results granted by our wonder-working God" to "a comfortable berth in Pullman's palace car" and a puff of the road which carried him free, without any delay, and thinks the effect so good that he offers it as a sample of the goods which he would trade for further riding on other roads.

And must a railroad company contribute to the maintenance of such a missionary?

The applications for sweet charity's sake are not all put on the ground of charity; but one poor woman, who makes her living with a sewing machine, has no other reason to give for asking for the transportation of her mother, sister and brother half-way across the continent than that she has "in great measure lost the use of my right Hand by the prick of a needle which caused a bone frog felon." Poor woman! doubtless it would have been a luxury to grant her request; but if it be made a rule to carry all poor and unfortunate people for nothing, where will we find cars enough? so many of us are poor.

A clergyman wants a pass for a "deeply afflicted lady, who has for years been afflicted with spinal disease, and has spent nearly all her living on physicians and is not cured yet," to enable her to go to a quack hospital.

The next seems to be from a very old man, judging from the handwriting, who, it will be seen, asks charity and recounts his large possessions in one breath. Hear him:

"DEAR SIR: I visited ——— yesterday with the expectation of calling on you for to solicit a religious pass for my self and if consistent for my wife also to the City of New York or Albany. I am a Regular Baptist and have been a life member of our Missionary Union since 1861 and have paid a live membership of our Home Mission, also paid two thirds of my Life membership of our Foreign Bible Society, and would be happy to receive a pass from you so that I could save fare enough for to finish my membership. I should be at present more flush of funds myself had I not spent so much time and money in securing a quit claim deed from an heir in the Northern part of ———, so that the party could not contest a will covering a piece of property which the Railroad wanted and since have purchased, and I have purchased a lot for a dock at ——— and am at present securing the right of way to lay a side track to it so that myself and neighbors can ship our stone by water to where they may be wanted. I have also lately purchased a farm of ninety-eight acres of land, upon which I think there is a stone quarry of about twenty-five acres, all of which if successful will yield revenue to your railroad interest. Our Anniversaries are held at Albany, N. Y., this year commencing the 20th of May. if you can favor me do it soon, and oblige your well wisher."

How very cool! But could a railroad company deprive so good a man of the credit of paying for a life-membership by giving him the money, or the ride which would have cost money? We trust not and we think not, for we see it indorsed "Regret" with the official pencil. Here we have the plea which every one can prefer—that we have spent money for desirable property, and would like to spend our traveling money also in the same way, if the roads will but carry us free. The poor sewing woman wanted passes because she was poor; the land-owner and quarryman apparently because he is rich.

And here is a lieutenant in the United States Army, who doubtless would scorn to ask for charity, but has nevertheless done it, desiring a pass to enable him to attend a reunion of the regiment of volunteers of which he was Colonel. He had given \$25 of his poor Second Lieutenant's pay toward the expenses of the gathering, and finds he has not enough left to pay for taking him there. It is a pitiable case, truly; but must the Alaska & Patagonia Railroad Company eke out the pay of our army officials?—and must we have army officers who will ask it?

Let us pass to those who ask favors on account of official position.

This is from a member of the (Alaska) Legislature:

"Mr. ———:
 "Sir: Being a member of the present Legislature and living near the Northern Extension of the Road of which your its attorney, a Pass over said Road would be acceptable."

And was accepted, we presume; for it is endorsed "pass made." Well, if you give such things for the asking, you must expect to be asked for them.

The next is from a simple clerk in a State office, who asks for an annual pass for no other expressed reason than "having been appointed to a position in this department." He was "respectfully refused," which second word was certainly proper.

Another is an impudent missive from the Chief Engineer of the fire department of an important city. (There are no "important cities," you say, either in Alaska or Patagonia; but we say there are several between those countries.) It is apparently in reply to a letter in which an annual pass was refused, but promise was given to give trip passes whenever wanted. He says:

"I also recd letter from Mr. ———, of ———, giving me the same encouragement that you do in the way of trip passes—which is very good of both of you, but rather think I will not trouble you for them, as I have annual passes over all the other roads running out of city, and I expected same from your road."

I also obliged your road in different ways; for instance, your road built a large freight house in the Heart of our Fire Limits, and could have stopped its erection, as I have that power, but allowed it to go on. So I do not consider it any complaint for any railroad for a pass, as it is about the only tax they pay the city."

And how does it suit the city, may we ask, to have a tax paid to one of its servants, and not into its treasury? And what sort of a chief of a fire department is he who will permit the creation of a dangerous structure in hope of free passes? Here is a civil service that needs reforming.

A Colonel in the army—an army whose officers have

been counted the most faithful and scrupulously honorable servants of the nation, and we are sure really have been such, writes:

"As I expect to make a trip to ——— on unofficial business sometime during the approaching summer, you will place me under many obligations by furnishing me with a trip pass and return for myself and wife from ——— to ———.
 "Should it be in my power at any time to reciprocate the favor in any manner, I assure you it will afford me great pleasure to do so."

But a Colonel in the army, has no right to reciprocate such "favors." He should assign transportation for other reasons. The poor Lieutenant had no power to "reciprocate." The Colonel might have, and therefore the mere reason for not asking for favors.

Shall we call the following an official application, or is it journalistic? The editor of a country newspaper, who has held an annual pass, returns it at the end of the year with the request that it be renewed so as to include his wife, "who has been associated with me in the editorial charge of the ——— for two years," but was about to become a deputy of a county officer, which position she had held previously, "and in 1868 effected a change in the manner of entering railroad taxes upon duplicates which made a correction in the former system, reducing the amount to each of the several roads in the county from \$250 to \$500 per annum. In inaugurating the new tax system just passed by our Legislature, she will be in a position to guard the interests of railroads very materially." Evidently this man is lost to shame. He wants a retainer for his wife, and her services will be seen in the tax list.

We close with a publisher who, we fear, is but the type of a class. He is publishing a local railroad guide and wants a pass in consideration of putting the road's time-tables first in the book. This is simply an offer to trade; but apparently fearing that what he has to give will not be thought worth the pass, he adds:

We have had an offer from ——— (railroad company) of a pass, if we will put their time-table in the front part of the "Guide" and cut yours down one-half and put it in the back part, which we very much dislike to do, but self-interest will compel us to do so if you cannot comply with above request."

This being a dirty charge against a reputable railroad company—a rival perhaps—the officer to whom it was sent referred it to officers of that company. This developed the fact that they had not in any way communicated with the writer of the letter, had made no arrangement with or proposition to him, and would not make any such proposition.

And now shall we inveigh against applicants for passes, wonder how men can be so servile, so deceitful, so covetous, so hypocritical, so utterly base and cringing as some of the writers of these letters have been? Shall we pity the companies who receive and feel compelled to grant many such applications? We shall not; for the companies only are to blame. They dug the pit which they have fallen into, and they certainly must flounder there as long as men would rather ride free than pay fares, until they help themselves out. They see their mistake plainly enough, and regret it; and hundreds of officers now who found the custom on their accession, established years ago and not to be abolished without a struggle and perhaps some union of forces before the struggle, feel that they are suffering for the sins of their predecessors, and count the burden greater than they can bear. But it is the inevitable penalty for evil, which often affects more than the evil-doer. The railroad companies alone established this custom; they have taught men of various classes to depend upon free traveling, and, as is inevitable, this privilege has become part of their regular and recognized advantages, taken into consideration, though usually not knowingly, in fixing wages and prices. There are some men who would not be able to compete with others in their business did not they, as well as those others, avail themselves of the gifts which railroad companies give them. The railroad companies have created the evil and they must make the reform. This, as all signs show, they are beginning to do, though with too little vigor and decision. The officer to whom we are indebted for the letters above quoted says to us: "Continue to labor for our salvation." But, speaking to the railroad companies generally, the only answer possible is:

WORK OUT YOUR OWN SALVATION.

State Competition in Massachusetts.

On Tuesday of last week the lower house of the Massachusetts Legislature by a vote of 133 to 90 passed a resolution substituting the minority report (recommending consolidation and working by the State) for the majority report (recommending consolidation and corporation management) of the committee on the Hoosac Tunnel and the connecting railroads. It has been understood that a majority of the Senate favors the adoption of this report and the policy recommended, and that only in the lower house was it likely to be defeated, so

that this action would seem likely to insure the adoption of the policy of State management of a railroad from Boston to Troy, so far as the Legislature can effect it. The opponents of State management claim that Governor Washburn's recent action in vetoing the bill to grant aid to the Lee & New Haven Railroad is an indication that he will also veto a bill providing for the State's managing the Tunnel Route; but it is hard to see any similarity between the two proposed policies.

The policy which now seems likely to be favored by any Legislature, and perhaps to prevail, is that which has been advocated by Mr. Charles Francis Adams, Jr., as described in his speech published in these columns a few months ago. It is not, as some seem to think, a resort to the government as more efficient and more economical than a corporation, but an attempt to regulate rates by the competition of a line or system of lines on which there will be no temptation to make greater profits than will pay a fair interest on the cost of the property. By the terms of the proposed law the State is to take in perpetuity the Fitchburg Railroad, the Vermont & Massachusetts, and the Troy & Boston (which, with the Troy & Greenfield Railroad and the Hoosac Tunnel, which are now owned by the State, make up the Tunnel Route), guaranteeing 8 per cent. on the stock of the Fitchburg, 4 per cent. on that of the Vermont & Massachusetts and 25 per cent. of gross earnings for the Troy & Boston. It is, therefore, no scheme for stealing the property of railroad companies. The fixed rental for the Fitchburg is equal to its dividends for several years past, and that for the Vermont & Massachusetts much larger than its somewhat irregular dividends heretofore.

There is one reason why railroad companies might welcome the passage of the bill, that is, if there is a reasonable probability that the road would be skillfully and successfully worked. There will be a great pressure, on a line so managed, for all sorts of favors and concessions in rates, etc., such as corporations are compelled to refuse—or think they are—almost daily. Now, with State management, the granting of such unreasonable demands will soon prove their unreasonableness by the results; while their refusal will probably have to be accompanied by explanations of the reasons, fitted for popular apprehension, which would be of great value to all other roads. Moreover, all the experiments, more or less promising, which are urged as likely to be successful and profitable, but which corporations usually refuse to make, as involving too great risks, might be made by a State management, if it should once prove successful. The entire failure of State management in such a State as Massachusetts to equal corporate management in economy and efficiency would relieve corporations of a vast amount of obloquy. So from the failures and successes alike of a line worked by the State, railroad companies in Massachusetts and out of it might find their advantage.

The Master Car-Builders' Convention.

This Association will hold its annual meeting in Boston, on Wednesday, the 11th of June. The subjects which will come up for discussion are Warming, Ventilating and Lighting of Passenger Cars; Car-Brakes; the Use of Check-Chains on Cars; the Interchange of Cars; the Form and Proportion for a Standard for Car Axles, and Car Roofs.

These subjects are all of very great importance, and worthy of careful investigation and consideration. Committees were appointed at the last annual convention to report on them. As most of our readers know, the organization and method of doing business of the Car Builders' Association is substantially the same as that of the Master Mechanics; in fact the former was organized before the latter. We have frequently spoken of the efficiency of the plan which these associations have adopted in collecting information, and thus presenting for discussion any subject which is investigated in this way. The circulars of inquiry which are sent out serve two good purposes: they first present the salient points of a subject for consideration, and then induce the members to think and investigate the topics which are thus brought to their attention; in the second place they secure an expression of opinion, and the communication of important facts which aid and furnish the committee with material for making their report. The members then come to the meetings in a measure prepared for the discussion after their attention has been drawn to the subject to be considered. The railroad system is now so extensive, and the pecuniary interests involved so great, that the usefulness of such associations is assured, if they only do the work which they will always find needing to be done. If, for example, the Association will establish a standard form and proportion for car axles and secure its general adoption, it will thus attain an end which will greatly facilitate traffic, reduce expenses and save endless annoyance, which the present diversity now causes. If the discussion of the subject of ventilation will only cause the members of the Association to realize the importance to passengers of abundance of fresh air, and suggest to them the means of supplying it, they will at least deserve the gratitude of all travelers.

It is of course impossible to estimate the money value to railroad companies of the information which an intelligent head of a car department may acquire at these meetings. Information of this kind has often only a negative value, and simply serves to prevent the learner from doing foolish things. The value of

this does not appear on the books in any way, and therefore those who are only versed in the lore which ledgers and annual reports teach are often unable to see what good purpose meetings, such as the car builders propose to hold, will accomplish.

The chief danger, however, to which all such associations are exposed is not that there will be no work for them to do, but that they will not do it. There is always a very considerable proportion of members who are ready to say what should be done, but who never will help to do it. They complain and find fault with what others do, but do not lift a hand themselves. Then there are some who sneer and laugh at all that is done, and who attend only for the sake of having a good time. The only excuse which an association of this kind has for its existence is that it does useful work, and as soon as it ceases to do this, there is no reason for its continuance.

We are glad to be able to state that there is every reason to believe that the session of the car builders this year will be one of the most successful which they have yet held. The committees, we learn, have received a larger number of replies to their circulars than have ever been received before. They therefore have the requisite material for making full reports, which will doubtless be of corresponding interest. If now the men who are really interested in the objects of the Association can only be induced to take an active part in the discussions and the proceedings generally, the effects of it will, we feel sure, be very apparent in the next annual report. The subjects for this year's meeting have greater and more general interest than those presented at previous conventions, and will open a field for much wider discussion. When men who build cars are asked "how many cubic feet of fresh air do you think should be supplied to each passenger per minute in order to keep the air in a car pure," they must either confess ignorance or else have some notion how to answer it. We fancy that many who will attend this year will come with at least some little information concerning this subject. When, too, a car-builder is asked "what size of journal he would recommend for a standard axle if there were no car axles in use," he is very apt to reflect about it, and come with some facts or experience to contribute toward deciding the question of the size for a standard journal. These and other subjects present some definite issues and involve questions about which there is great difference of opinion. These we hope will be fully discussed, and as far as possible, the opinions of all the members be elicited.

Record of New Railroad Construction.

This number of the RAILROAD GAZETTE has information of the laying of track on new railroads as follows:

Missouri, Kansas & Texas—Northern Extension.—Completed from Sedalia, Mo., northeastward to Moberly 53 miles, by the laying of 21½ miles of track on the Moberly end. *Indiana & Illinois Central.*—Extended from the west line of Douglas County, Ill., westward to Decatur, 25 miles, completing the Western Division—from Decatur, Ill., due east to the Wabash River at Montezuma, Ind. *Cairo & St. Louis.*—This narrow-gauge railroad has been extended southward 6 miles to Headquaters, Ill. *Little Rock, Pine Bluff & New Orleans.*—Extended from Vanner's northwestward 21 miles to Dorris Lake, Ark., within three miles of Pine Bluff. *Texas & Pacific.*—Extended eastward 8 miles to Eastport, Texas, 28 miles east of Dallas. *International & Great Northern—Great Northern Division.*—Extended from Lyndale, Texas, northward 7 miles to the Sabine River.

This is a total of 88½ miles of new railroad.

THE NEW YORK & OSWEGO MIDLAND RAILROAD, which last season seems to have diverted its energies and money from the completion of the main line to the construction of a branch westward, and has for some months been in a bad way, failing to pay employees and contractors, and also failing to complete the fifteen or twenty miles which separate the northern and southern sections of the line, has been taking steps toward a "reorganization," but on just what terms has not yet been made public—or perhaps agreed upon. It is understood, however, that a syndicate embracing wealthy banking firms and capitalists has been formed, to whom will be given the control of the road—meaning, probably, a majority of the stock—on condition that they subscribe for \$1,000,000 of unissued bonds, out of which the road is to be completed. George Opdyke, of Opdyke & Co., New York, who have negotiated the company's bonds, is to be the President, in place of Dewitt C. Littlejohn, of Oswego, who, however, is to remain a director. Drexel, Morgan & Co., bankers; Naylor & Co., iron merchants, and Russell Sage, Vice-President of the Milwaukee & St. Paul Railway Company, are named as parties to the syndicate, and it is reported that Conrad S. Jordan, E. A. Wickes and Charles H. Perkins will be directors in place of Messrs. Culver, Ames and Foster. A bill has passed the Legislature authorizing an increase of \$5,000,000 in the capital stock, which, unless very great improvements are made in the property (for which there is plenty of room), must make it pretty thin. By the report to the State Engineer and Surveyor for the year ending with September last, with 334 miles of road, the company had issued \$7,707,500 of stock and \$12,500,993 of bonds, and had besides a floating debt of nearly half a million. This is at the rate of \$23,076 of stock and \$37,427 in bonds per mile of road, the equipment meanwhile being light. But there has been since that time considerable issues both of stock and bonds, and not much increase in length of road. The company was authorized to issue \$10,000,000 of stock before the recent law authorizing the increase, and it has probably all been issued, but we have seen no recent statement of the company's capital account.

The original design was simply to make a new line from New York to Oswego, and extravagant statements (as usual in such cases) were made as to the traffic that such a line might expect. The route is very little shorter than the existing one of the Delaware, Lackawanna & Western, or that formed by the

Rome, Watertown & Ogdensburg and the New York Central & Hudson River, while in grades the latter at least has very much the advantage of it. But it might perhaps be a fair property if economically and well constructed. But lately efforts have been made to secure a connection with Buffalo or the Niagara River, which would make it a competitor with the Erie and New York Central & Hudson River, with opportunities for a heavy through traffic. The Western Division was intended, we believe, to connect near Rochester either with the Lake Ontario Shore Railroad or with a proposed new line along the canal to Buffalo. The completion of the connecting roads is, of course, necessary to the success of this project, and also a vast expenditure of capital for equipment, terminal facilities, etc., and probably a combination with lines west of Buffalo. The New Jersey lines which the company has contracts to lease, and whose bonds it has guaranteed, have been made to cost enormously and need further large expenditures to make them equal to a heavy traffic.

NEW PUBLICATIONS.

Report on Narrow-Gauging the Ohio & Mississippi Railway.—Mr. John M. Goodwin, C. E., an engineer of singular versatility, critical ability and skill in expressing his opinions, was engaged last February by the Atlantic & Great Western Railroad Company, which was and is making preparations to change its gauge from six feet to the standard gauge, to visit the offices of the Ohio & Mississippi Company and obtain full information of the methods adopted in changing the gauge of its road in 1871, the alterations in rolling stock made necessary by the change, and the cost of the work, with statistics of the traffic and working expenses before and after the change. Having performed this service, Mr. Goodwin prepared a report, which we have here printed in a handsome monograph of 28 octavo pages, with a wide margin for notes.

Mr. Goodwin had access to the books of the Ohio & Mississippi Company, and conferred with most of the officers who directed the work of changing the gauge, and his information is probably as complete as is now attainable. He gives first a sketch of the progress of the work; the renewal of ties wherever needed; putting new switch ties at all switches, marked for the frogs of the standard gauge; the affixing of jaws for the new gauge on the switch bars, which were taken to the shops one by one for this purpose; the lining and surfacing of track, the curves being run in by the instrument; the gauges prepared (of which engravings are given) for "spotting" the ties and driving the inside spikes of the new gauge; the renewals of stringers on bridges and trestle, with new ties; the preparation of tables giving all the curves, with the exact decrease in length necessary for the outer rails on these curves, such rails being cut and placed in advance; renewals of iron made on the new gauge, and especially on the outsides of curves, the cutting to fit frogs being made in advance; the provision of track tools, at the rate of 16 spiking mauls, 14 chain bars and 14 levers for throwing track for each section of five miles; and the narrowing of sidings, wherever possible, before the time of the general change.

It will be seen, therefore, that aside from the change in rolling stock, which is the great and costly part of such a change, a very large part of the work was done before a rail was moved.

With this preparation, as we reported at the time, the gauge of the Louisville Branch of 53 miles was changed on Sunday, July 16, 1871; while on the following Sunday, within sixteen hours' time, the 340 miles of the main line were wholly changed, by a force of one foreman and 45 men per section of five miles. The method of working the force on the day, and indeed of collecting the extra force, is described.

Mr. Goodwin finds that the cost of labor on the road in making the change was \$619.47 per mile. For labor and material, as nearly as can be ascertained from the somewhat imperfect accounts, the cost was \$1,066.06 per mile. For the Atlantic & Great Western the cost is estimated at \$1,230.97 per mile.

There is also an investigation into the cost of changing the rolling stock. Many of the engines were not changed, but were broken up or sold; but of 58 changed the cost appears to have been \$5,060 each. The cost of changing the trucks of an eight-wheel freight car is given as \$23.30; of an eight-wheel passenger car, \$95; and of a twelve-wheel passenger car \$130, the whole cost of constructing such trucks being \$495, \$1,000 and \$1,250 respectively.

An interesting description is given of the method of transferring the car bodies from the wide to the narrow trucks, which was done at the rate of five per hour.

The effect of the change of gauge on the road cannot be said to be apparent from the receipts and expenditures given, and probably cannot very well be estimated, so many other influences having an effect as well as the gauge. The gross receipts in 1870 were \$3,134,750.75, and the working expenses \$1,938,805.42, or 62 per cent. For 1872 the receipts were \$3,528,773.58, and the expenses \$2,189,397.10, or again 62 per cent.

The report is certainly very interesting, and must be valuable to all who may have to make changes of gauge, especially from six feet to the standard gauge. Happily few such changes remain to be made in this country; but the experience will be almost equally valuable in changing the Texas and Louisiana roads of 5 feet 6 inches gauge (all of which has been determined upon, we believe), and, in a less degree, to the roads of five feet gauge, some if not all of which are sure to be changed in time to complete connections with the prevailing gauge; and we venture meekly to suggest that companies who have roads of three-foot gauge may learn here something which they may need to know when they shall wish to become parts of the railroad system of the country by widening their gauge.

Lake Shore and Suburban Map of Chicago.—This map, published by Rufus Blanchard, No. 132 Clark street, Chicago, gives

on a sheet 48 by 46 inches what is really a series of maps of Chicago and the country adjacent. For, while the greatest part of the sheet is taken up by a map, on a scale of three-fourths of an inch to the mile, of Cook and DuPage counties, the northeast corner of Will, the east tier of townships of Kane (including all the river towns), a part of Lake County, Ill., and of Lake County, Ind., extending for about 36 miles north, 20 miles east, 28 miles south and 39 miles west of Chicago, it has also (utilizing space occupied by Lake Michigan) a map of the city on a scale of about 2½ inches per mile, showing all the parks and boulevards; and in one corner, on a scale of 18 miles to the inch, a map of the country for 100 miles around Chicago. The map is just issued, and has been brought down to date, giving all the new railroad lines and all the new stations. The new line of the Milwaukee & St. Paul is shown, that of the Chicago & Pacific and the cross-cut of the Chicago & Northwestern from Irving Park, on the Wisconsin Division, due south to the site of the new shops on the Galena Division, near the center of Section 10, Town 39, Range 13, East—that is, as near as may be, five miles due west of the Kinzie street depot. It has also the tracks laid from Hyde Park, near the lake shore, to South Chicago. The extent of this county map may be better understood by those not familiar with the lines of the counties when we say it includes Waukegan, on the Milwaukee Division of the Chicago & Northwestern; Gurnee (four miles further west), on the Milwaukee & St. Paul; Barrington, on the Wisconsin Division of the Chicago & Northwestern; Elgin, on the Chicago & Pacific, and the Galena Division of the Chicago & Northwestern; Geneva, on the Omaha line of the Chicago & Northwestern; Aurora, on the Chicago, Burlington & Quincy; Joliet, on the Chicago & Alton and Chicago, Rock Island & Pacific; Matteson, on the Illinois Central; Bloom, on the Chicago, Danville & Vincennes; Schererville, on the Pittsburgh, Cincinnati & St. Louis; Hobart, on the Pittsburgh, Fort Wayne & Chicago; Lake, on the Michigan Central; and Miller, on the Lake Shore & Michigan Southern. It also contains the whole of the "Joliet Cut-off," from Lake, Ind., to Joliet, Ill. The only omission we notice is of the new branch of the Chicago & Northwestern from Geneva down the west bank of Fox River to Batavia (2½ miles).

We have recently had inquiries concerning the location of new railroads in the vicinity of Chicago, and of their stations, by parties who have dealings, or are asked to have them, in suburban lands. This map gives such information very clearly, it seems to us, and, so far as our knowledge goes, with accuracy. Our knowledge of the publisher's conscientiousness in this work gives us full confidence in its accuracy in the matters of which we are not able to judge. It is altogether an extremely convenient map.

Convention of the American Society of Civil Engineers.

The American Society of Civil Engineers convened in the gentlemen's parlor at the Galt House, Louisville, at 11 o'clock a. m., May 21, according to the terms of adjournment of their previous meeting at Leveich. The meeting was called to order by the Secretary, G. Leverich.

MEMBERS PRESENT.

The following is a list of members present at this convention: Hon. W. J. McAlpine, Pittsfield, Mass.; Wm. E. Worthen, New York; E. S. Chesbrough, Chicago; James O. Morse, New York; Thomas C. Clarke, Philadelphia; Wm. P. Shinn, Philadelphia; J. Dutton Steele, Pottstown, Pa.; Jacob M. Clark, Elizabeth, N. J.; Gilman Trafton, Rudolph Fink, Albert Fink, F. W. Vaughan, John MacLeod, Louisville; Charles W. Copeland, New York; Joseph Whitney, Cambridge, Mass.; C. Shaler Smith, St. Louis; G. Leverich, Brooklyn; Edward P. North, Providence, R. I.; Alfred P. Boller, New York; Wm. H. Wiley, Zanesville, O.; Charles H. Myers, New York; James Owen, Newark, N. J.; E. A. Fuertes, Charles Macdonald, New York; Martin Coryell, Wilkesbarre, Pa.; D. M. Green, Troy, N. Y.; James Archibald, Scranton, Pa.; W. H. Kennedy, Pittsburgh; Squire Whipple, Albany, N. Y.; Edward Turner, Owensboro, Ky.; Wm. E. Kelly, New Brunswick, N. J.; James D. Reynolds, Chicago; R. P. Rothwell, Wilkesbarre, Pa.; Gorham P. Low, Jr., Pittsburgh; S. T. Fuller, Philadelphia; John B. Dunclee, Brooklyn; S. Clarence Ellis, Boston; Henry M. Wightman, Boston; Cook Talcott, High Bridge, N. J.; W. W. MacLay, New York; Henry Earnshaw, Cincinnati; N. W. Condit, Jr., Jersey City; P. P. Dickinson, New York; F. Collingwood, New York; Edwin Hacher, Louisville; Marshall Morris, Louisville; M. S. Belknap, Jr., Louisville; Charles Herman, Louisville; Fred. de Funiack, Louisville; John MacLeod, Louisville; General I. M. St. John, Louisville; Colonel Henry D. Whitcomb, Richmond, Va.; Emory C. Davis, Holyoke, Mass.; E. N. K. Talcott, Dover, N. J.; Theodore Allen, New York; G. Jordan, Montgomery, Ala.; Moses Lane, Milwaukee; Clark Fisher, Trenton, N. J.; Frederick C. Weir, Cincinnati; Thomas D. Lovett, Cincinnati; Col. W. E. Merrill, U. S. A., Cincinnati; A. L. Hives, Mobile; De Volson Wood, Hoboken; W. D. Pickett, Memphis; J. H. Humphreys, Memphis; Niles Merriwether, Memphis; F. Hinecker, Pittsburgh.

ADDRESS OF VICE-PRESIDENT CLARKE.

On taking the chair, Vice-President J. M. Clarke, of New York, delivered the following address:

"GENTLEMEN OF THE SOCIETY—The pleasure of this re-union is dashed with sincere regret, that we shall fail to hear those appropriate and genial words of official greeting which the Society naturally expected from our distinguished President, Horatio Allen, Esq., of New York. Almost at the very hour of our assembling together, we are advised that both he and our first Vice-President, Col. Julius W. Adams, of Brooklyn, are prevented from joining us by unexpected emergencies. We shall miss their presence and wise counsel—much that would have been said by them, and certainly much that ought to be said on an occasion like this, must, therefore, remain unspoken.

"The appropriate business of the convention will be laid before you in the order determined on by the gentlemen entrusted with its arrangement.

"Papers of scientific and professional interest will be presented for your consideration, and it is hoped that the convention will have at its disposal ample time for discussion of the subjects involved.

"The present aspect of certain questions of importance, relating to the organization and practical workings of the Society, which were raised at the Chicago convention held in June of last year, or growing out of their discussion, will be best learned from the reports of the various committees then appointed.

"A profound agitation of the public mind at this juncture,

in connection with transcontinental and internal commerce, indicates that at no distant day the profession must contribute largely to the solution of important problems in social and political economy. These and kindred problems are worthy the deepest study of the statesman and the sage, and their successful solution must raise the engineer—in public estimation as well as in fact—to a place among the foremost benefactors of mankind.

"For the informal and preliminary approach to a full comprehension of the fundamental condition on which the solution of these grander and more general problems rest, the annual convention affords facilities scarcely attainable by the Society in any other way.

"Does not the convention, in fact, find, in such a broad field of general investigation, a more important and effective function than it would if confined too much to the discussion of mere scientific detail, or transaction of routine business? The informal and free interchange of opinion of which it may be made the occasion, will be largely effective in elevating the profession to a commanding plane, from which it can, with enlarged and sharpened vision, discern

—the tops of distant thoughts,
Which men of common stature never saw."

"The objects of our organization, though of boundless extent and variety, are, in their principles of connection, simple and specific, and suggest for their attainment the use of methods in a corresponding degree simple, elementary and direct. Experience may develop a tendency to diminish legislation, simplify the organic law wherever practicable and avoid multiplicity of detail in the working machinery. Our development should be the spontaneous outgrowth of a high order of intelligence, and reveal more of the unobtrusive yet resistless energy of a natural force than the sound of the hammer or skill of the craftsmen.

"Our warmest thanks are due—individually and collectively. I had almost said beyond the power of language—to those whose considerate generosity has converted our several journeys hither into a continued ovation, and more than royal reception.

"We greet our brethren of the Southwest with open arms and hearts, accept with cordial thanks their proffered 'Kentucky hospitality,' boundless and fruitful as our national heritage.

"Gentlemen, in behalf of our President, I now have the distinguished honor of extending you a cordial and fraternal greeting, invite your aid in the affairs of the convention, and declare this same open for the transaction of appropriate business."

In the absence of the regular President of the society, Horatio Allen, Esq., of New York, Charles A. Herman, Esq., Engineer of the Louisville Water Works, was called to the chair, and presided over the deliberations of the convention.

An invitation from Albert Fink, Esq., inviting the members of the Society to a reception at his residence in the evening, was accepted. Mr. Fink also extended an invitation to the members to visit the Mammoth Cave, over the line of the Louisville & Nashville Railroad, which was accepted.

THE READING OF PAPERS.

The reading of papers was then announced in order.

These were as follows:

"Tests of Bridge Irons," by J. Dutton Steele, C. E., which gave the results of the application of nine different strains, varying from 20,020 to 50,287 pounds, the latter being applied seven times to chord links made of Phoenixville "best best," or double refined new iron, 3 by 1 in section, with upset eyes of 33 per cent in excess of section of bar, which was required by specifications to have an elastic strength of 24,000 and a breaking strength of 50,000 pounds per square inch, with eyes strong enough to break the body of the bar. The testing machine was a lever with weight. Applications of 20,020 and 23,600 pounds, which stretched in 10 feet 1, and 2 of an inch, it recovered wholly. Under tests of 50,287 pounds the first application stretched 1 inch and recovered 1 inch, the second and third stretched 1 and recovered 1, the fourth, fifth and sixth stretched 1 and recovered 1, and the seventh broke in the eye after a stretch of 12 inches in 24 feet, and in the eye of 1, of an inch.

Another test was of round truss rods, 1½ inches in diameter, from M. B. Stotsenburg & Co., Wilmington, Del. In these tests, 20,000 pounds per square inch stretched 1 inch in 14 feet and recovered; 24,000 pounds stretched 3-16 inch and recovered; 26,000 pounds stretched 1 inch and recovered nearly 1 inch; 50,000 pounds stretched 7 inches in 14 feet and recovered 1 inch; 55,000 pounds stretched 9 inches and recovered 1 inch; 52,000 pounds stretched 11 inches and recovered 1 inch; and a final application of 50,000 pounds broke the body of the bar, near the eye, after a permanent stretch of 3½ feet in 14. The last rod was made of scrap iron. It was concluded from these tests that it is the elastic and not the breaking strength which should govern the use of iron in bridges.

The second paper was, "Experiments on Resistance to Compression of Wrought-Iron Struts," by Thomas C. Clarke, of Philadelphia.

The third was, "The Detroit River Tunnel," by E. S. Chesbrough, of Chicago.

The fourth was, "Production, Traffic and Transportation of Freight and Passengers," by Martin Coryell, of Wilkesbarre, Pa., which gave a sketch of the history of transportation and its progressive improvement, with a glance at its future.

This paper was followed by a speech of about 20 minutes by Hon. Wm. J. McAlpine, of Pittsfield, Mass., on the importance of water transportation; after which the convention adjourned till 2 p. m.

AFTERNOON SESSION.

After re-assembling the convention was addressed by Professor Weine, of Troy, N. Y., on railroad and canal transportation, and the subject was further discussed by other members.

REPORTS OF COMMITTEES.

The Committee "On the 'Norman Medal,' to arrange details of a plan for instituting a prize fund, which will enable the Society to award a gold medal each year for the best essay on engineering," consisting of Jacob M. Clarke, G. Leverich and James O. Morse, submitted a partial report, but asked for further time, which was granted, and the Committee continued with instructions to present their report to the annual convention in 1874.

An elaborate report of twelve printed pages was then made by the Committee appointed "to consider the best means of promoting intercourse between the Society and its members, and the subject of allied societies or chapters, and to report such changes of the constitution and by-laws as may be necessary to effect the objects contemplated," consisting of E. S. Chesbrough, O. Chaute, Thomas C. Clarke, Julius W. Adams and William P. Shinn.

This document consisted of a majority, a minority, and a supplementary report, and the balance of the day was consumed in its discussion; pending which a letter from Henry A. Sims, Secretary of the American Institute of Architects, addressed to T. C. Clarke, was read. The letter was in regard to the success of the "chapters" in that Society, and spoke highly in favor of the working of the plan.

Mr. Allen then offered the following resolution:

"Resolved, That any change in the constitution in the formation of chapters is inexpedient at the present time."

A great deal of discussion followed the reading of this resolution, and before a vote could be had the convention adjourned to meet the next morning at ten o'clock.

RECEPTION AT COLONEL FINK'S.

In the evening, the members in attendance at the convention were handsomely entertained at the residence of Colonel Albert Fink, on Broadway.

SECOND DAY'S PROCEEDINGS.

Before the assembling of the convention, Messrs. Dennis Long and Samuel A. Miller informally invited the gentlemen composing the body to enter hacks provided for them at the Galt House door, and take a morning drive to see the Union Pipe Works. The invitation was accepted by about thirty members, and an hour was spent in looking at the manufacture of cast-iron gas and water-pipe.

At 10 o'clock the convention assembled, when the Chairman announced that, after the adjournment of the morning session, the members would take carriages and visit the Ohio River Bridge, the canal locks, the city water-works, and take a drive around the city.

A letter from Horatio Allen, the President of the Society, was read, expressing his regret that he was not able to be present, and hoping that the session would be pleasant and profitable to all the members.

CHANGES IN THE CONSTITUTION.

Mr. Wm. P. Shinn offered the following as a substitute for the resolution reported the previous day by Mr. E. S. Chesbrough:

"Resolved, That in the opinion of this convention, the changes in the constitution submitted by Mr. E. S. Chesbrough, Chairman, so far as they relate to the admission of members and associates, and to the provision for future changes in the constitution, are eminently proper and necessary, with the provisions in Article XX., for the election of associates to be made as for members.

Which, after some discussion, was adopted.

CHAPTERS.

The same gentleman offered the following, which was adopted:

"Resolved, That as the discussion upon the subject of the formation of chapters has indicated the inexpediency of definite action upon the question by this convention, the reports of the Committee, of which Mr. E. S. Chesbrough was Chairman, so far as they relate to that subject, be laid on the table.

REPORTS OF COMMITTEES.

being in order were called for, but none being ready they were deferred till the next convention.

THE NEXT MEETING.

It was resolved that the selection of the place for the next convention should be made by letter ballot to New York, thus leaving the question open for some time.

An invitation to visit the Falls City Car Works was accepted.

READING OF PAPERS.

The reading of papers was then recommenced, when Mr. Edwin Thatcher, of Louisville, read a paper giving tables of strength of cast-iron columns.

Prof. De Volson Wood, of Hoboken, N. J., read a scientific paper on "Backwater in Rivers as Caused by Floods," which he illustrated by water-colors and the blackboard.

Papers were also read as follows: "Water-power of the Falls of the Ohio," by Morris S. Belknap, of Louisville; "Iron Hulls for Western River Steamers," by Theodore Allen, of New York; "Foundations under Water," by Gabriel Jordan, of Montgomery, Ala.

Several other papers were read, when the question of

BRIDGE DISASTERS.

came up, and the following resolution was adopted:

"Resolved, In view of the recent calamitous disaster of the falling of the bridge at Dixon, Illinois, and other casualties of a similar character that have occurred and are constantly occurring, that a committee of five be appointed to report at the next annual convention upon the most practicable means of averting such accidents."

In accordance with the above resolution the following committee was appointed: Capt. J. B. Eads, of St. Louis; Gen. I. M. St. John, of Louisville; C. Shaler Smith, of St. Louis; Alfred P. Boller, of New York; and James Owen, of Newark, N. J.

RESOLUTIONS OF THANKS.

The convention then, after passing the usual resolutions of thanks to the railroads, their accommodating host, the committees who had prepared everything for their comfort and convenience, the officers of the body, Colonel Albert Fink, who had so hospitably entertained them, and those who had invited them to visit places of interest, adjourned to meet again according to the result of the letter ballot, which is to be had shortly.

AROUND THE CITY.

After dinner, at about 3½ p. m., most of the members took hacks, which had been sent to the door for the purpose, and drove around the city, visiting the Ohio River Bridge, the water-works, the cement mills and other places.

THE BANQUET.

A little after 9 o'clock the doors of the spacious and elegant dining-room of the Galt House were thrown open. The engineers and their guests, altogether numbering some hundred and fifty, filed in quietly to their seats.

TOASTS AND SPEECHES.

Mr. Chas. Herman, who presided over the banquet, opened this part of the festivities by calling the assemblage to order and speaking as follows:

SPEECH OF MR. HERMANY.

GENTLEMEN OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS: In behalf of the resident members of your Society, and in behalf, too, of the citizens of Louisville, I have the honor to extend to you a cordial welcome. We give you the welcome of the South and Southwest. It has never been my pleasure to meet so great a number of the profession together as I see before me to-night. As a member of the Society, what I have done to assist in your labors and to help you enjoy this visit has been a labor of love. I see here every section and most of the States represented. We have men with us the frosts of whose winters have been gathered in the service of our noble calling—men who graduated in the field under the pioneers of American engineering—some of them the founders of the Society. I take this opportunity to congratulate them on their good work. From its past history, its present membership, its standing and character and the exact sense of propriety which pervaded the proceedings just concluded, I can foretell its progress in honor and prosperity until it shall be second to none in the land. Its founders should feel that they are rewarded by the success of their efforts. I am sorry that there are not more of them here to-night; but let us remember them in our enjoyment. I offer the following sentiment:

"A cordial welcome to our brethren from the East."

Mr. Herman's speech was greeted with loud applause, and Vice-President Jacob M. Clark, of New York, responded to the sentiment.

Mr. Clark's happy remarks were received with demonstrations of delight by the assemblage; and after he sat down Mr. B. Dupont, President of the Elizabethtown & Paducah Railroad Company, proposed:

"The American Society of Civil Engineers."

Hon. W. J. McAlpine, of Pittsfield, Mass., being called on to respond, did so substantially as follows:

SPEECH OF MR. MACALPINE.

It gives me pleasure to respond to that sentiment. I am

called on to do so, perhaps, because I am the oldest member of the profession present, and, except two or three, probably the oldest in the United States. I thank you for the honor. I have the misfortune to be the last of my race; I have no son, and I have adopted the Society as my son. I have bestowed upon it what I prize dearly, viz.: my library, the books that I have read and annotated for fifty years. I hope the junior members, when they come to read my notes, will continue them. I am now almost 70 years of age, and I hope they will receive the library as an earnest of my having adopted the Society as my son. Most of you know I belong to foreign societies, but it always and everywhere gives me pleasure to say I am an American engineer, and I always represent the American Society when abroad. All that is necessary to do to secure respect is to tell what we have done. I consider it a high honor to belong to this Society, and when you younger members go abroad you will have no better recommendation than to show your diploma as a member of the Society.

Col. Albert Fink proposed "Our sister city, Cincinnati," which was responded to by Mayor Johnson, of that city.

Gen. I. M. St. John proposed "The city of Louisville—our pride, our love, our hope," which was responded to by Mayor Jacob.

Mr. A. P. Boiler, of New York, proposed "The railroads—evidence of the success of civil engineers." Responded to by Wm. P. Shinn, of Pittsburgh.

The toast—"The home of our society, the Empire city of our common country, the imperial city—New York," was responded to by Theodore Allen, of New York.

"The Judiciary of the West." Responded to by Judge Hofer, of Cincinnati.

"The Garden City of the West—Chicago." Responded to by E. S. Chesbrough, of Chicago.

"The city of St. Louis." Responded to by C. Shaler Smith.

"Pennsylvania, the great coal and mining State of the Union." Responded to by Dutton Steele.

Mayor Jacob then said: "I think we should be derelict in our duty if we parted without drinking to the good health and prosperity of the gentleman who has conferred upon us so much happiness this evening—our worthy host, Colonel Jilson P. Johnson.

Colonel Johnson, the proprietor of the Galt House, responded in terms very complimentary to the profession.

At a late hour the guests separated. The next day about thirty of them visited the Mammoth Cave and the remainder took the various trains for their homes.

Boston Bridges.

TO THE EDITOR OF THE RAILROAD GAZETTE:

The article in your issue of May 10, concerning the failure of the Dixon bridge and its logical deductions, will, it is to be hoped, have its proper influence.

Concerning your reference to the iron bridges in Boston, allow me to make a statement. There are a few bridges here which were designed by an educated engineer, but most of them are weak, as you say. The principal one, a large bridge erected a few years since, is now reported as having settled, and to be distorted. Parts which should act as struts are proportioned as ties; but the structure being of the bowstring order, and of long spans, therefore heavy, it seems to keep its shape by its inertia, under ordinary loads. At the time of its commencement the contractors were openly charged with bribery to the amount of \$20,000.

Another danger from uninformed officials is the practice of selecting bridges solely by the price.

The writer recollects inducing some selectmen to invite bids on uniform specifications. These required good work and no more than the proper strength, but they were much surprised to find prices higher than were expected and much more uniform.

Boston, May 13, 1873.

CHICAGO RAILROAD NEWS.

Lake Shore & Michigan Southern.

A slight change of time has been made on this road, which took effect May 25. The mail train arrives now at 9 p. m., instead of 9:20, as heretofore. A new express accommodation train has been placed on the road, which leaves at 2:30 a. m., and arrives at 6:55 p. m. The design is to furnish a needed local accommodation train chiefly between the cities of Elkhart and Cleveland. The Elkhart accommodation train arrives in Chicago at 9:55 a. m., or 15 minutes earlier than heretofore. The floor is now being placed in the new depot preparatory to the concert which is to take place June 5 and 6.

Chicago, Rock Island & Pacific.

The terrible tornado which did such a work of destruction on the Northwestern Branch of this road, fortunately did no injury to the property of the road.

Chicago, Burlington & Quincy.

The officers are looking after plans for the new shops at Aurora, which are to take the place of the ones burned May 18. It is understood that the new buildings will be constructed either of brick or stone and will be as nearly as possible fire-proof.

Free Passes.

There is no doubt but that the railroad companies would like to get rid of the pass system entirely. But until some general and concerted movement is made for the purpose, there does not seem to be any near approach of the time when it can be accomplished. It is said that a large portion of the freight which comes to Chicago from the South and Southwest would seek other outlets and other routes were it not that the shippers are giving free passes to Chicago over the lines which take their freight. Why concessions in rates would not do as much as concessions in the shape of passes does not appear.

PERSONAL.

—Mr. Sumner Sibley, Master Bridge Builder of the Boston & Albany Railroad, was killed at West Warren, Mass., May 12, by a cap-timber of an old bridge which was being removed. The timber fell upon him, killing him almost instantly.

—The Cleveland (O.) Herald announces that Mr. Oscar Townsend has resigned his position as General Manager of the Cleveland, Columbus, Cincinnati & Indianapolis Railway, for reasons entirely of a personal nature. Mr. Townsend was President of the company from 1868 until the last election, when he withdrew from the position to take that of General Manager.

—It is reported that General John Echols has resigned his position as President of the Louisville, Cincinnati & Lexington Railroad Company. General Echols has only held the position since last November.

—Mr. C. M. Randall, of New York, Vice-President of the Illinois, Missouri & Texas Railroad Company, died recently of a paralytic stroke at Brookfield, Mo.

General Railroad News.

TRAFFIC AND EARNINGS.

—The earnings of the Great Western Railway of Canada for the week ending May 2 were: 1873, \$25,025; 1872, \$23,259; increase, \$1,766, or 7½ per cent.

—The earnings of the Grand Trunk Railway of Canada for the week ending May 3 were: 1873, \$23,100; 1872, \$23,300; increase, \$2,800, or 8 per cent.

—The earnings of the Petersburg Railroad for the year 1872 were as follows:

Passengers	\$93,601 88
Freight	175,087 79
Mail and express	20,254 82
Gross earnings (\$3,440 per mile)	\$28,944 49
Operating expenses (53½ per cent.)	153,093 21
Net earnings (\$1,593 per mile)	\$133,851 28
Interest account	63,204 42
Surplus	\$70,646 86

—The earnings of the Erie Railway for the week ending May 15 were: 1873, \$451,026; 1872, \$459,452; decrease, \$8,426, or 1½ per cent.

—The earnings of the Kansas Pacific Railway for the second week in May were: passengers, \$28,439.25; freight, \$45,402.81; mails, \$2,055.31; total, \$75,897.37. Of this amount, \$4,180.33 was for transportation of troops, mails and Government freight.

—The earnings of the Chicago & Northwestern Railway for the second week in May were: 1873, \$247,025; 1872, \$212,435; increase, \$34,590, or 16½ per cent.

—The earnings of the Milwaukee & St. Paul Railway for the third week in May were: 1873, \$178,239; 1872, \$120,345; increase, \$57,894, or 48½ per cent.

—The earnings of the Georgia Railroad for the year ending March 31, 1872, were as follows:

Gross earnings (\$6,998 per mile)	\$1,234,563 53
Operating expenses (69½ per cent.)	1,133,260 73
Net earnings (\$2,113 per mile)	\$490,195 78

The gross earnings show an increase of about 20½ per cent. and the net earnings an increase of 20 per cent. over the preceding year.

—The receipts of the Chesapeake & Ohio Canal for the month of April were \$60,091.95; expenditures, \$17,888.22; net revenue, \$42,203.73. The coal tonnage for the month was 96,478, a decrease of 10,830 tons, or 12½ per cent., as compared with April, 1872.

—The earnings of the Chicago & Northwestern Railway for the third week in May were: 1873, \$263,192; 1872, \$222,175; increase, \$41,017, or 18½ per cent.

ELECTIONS AND APPOINTMENTS.

—At a meeting of the Northwestern General Freight Agents' Association, in Milwaukee, on the 7th inst., H. W. Hubbard, of the Vandallia Line, was chosen President; Fred. Wild, of the Western Union, Secretary; J. C. Noyes (Indianapolis & St. Louis), J. B. Reed (Cincinnati, Hamilton & Dayton), C. C. Wheeler (Chicago & Northwestern), M. H. Smith (Louisville & Nashville), and E. B. Clark (West Wisconsin), Executive Committee. The next meeting will be held at the Boody House, Toledo, October 7.

—The incorporators of the Laurens & Asheville Railroad Company met at Greenville, S. C., May 9, and organized by the election of T. C. Gower as President, with the following board of directors: J. O. Hudnutt, W. E. Earle, J. P. Moore, J. Brinie, J. M. Sullivan, Greenville, S. C.; J. Owens, Y. J. P. Owens, B. W. Ball, Laurens, S. C.; J. N. Martin, Newberry, S. C.; W. J. Gayer, Charleston, S. C.; H. T. Farmer, Flat Rock, N. C.; L. M. Hatch, Asheville, N. C.

—Mr. W. W. Wells has been appointed Superintendent of Telegraph and Train Dispatcher on the Louisville, Cincinnati & Lexington Railroad, in place of J. J. Kertin, resigned.

—A. P. Bugbee has been appointed General Freight Agent of the Nashua, Acton & Boston Railroad.

—Mr. W. W. Berg, formerly local passenger agent of the road, has been appointed General Passenger Agent of the Boston, Concord & Montreal Railroad.

—At the annual meeting of the Albany Street Freight Railroad Company of Boston, May 16, the following officers were elected: President, Henry L. Leach; Clerk and Treasurer, George F. Child; directors, Adams Ayer, H. Leach, F. L. Ballard, F. D. Child, G. F. Child. The road connects the Hinkley Locomotive Works with the Old Colony Railroad.

—At the annual meeting of the Nashua, Acton & Boston Railroad Company, at Dunstable, Mass., May 20, the following directors were elected: E. H. Spaulding, H. Parkinson, B. Saunders, O. V. Dearborn, Dana Sargeant, Nashua, N. H.; John Fletcher, Jr., Acton, Mass.; C. Wakefield, Wakefield, Mass.; J. T. Burnap, Dunstable, Mass.; John C. Moulton, Lacomia, N. H.; C. G. Sargeant, Grantville, N. H.; J. B. Clarke, Manchester, N. H.; H. F. Dana, Brookline, Mass.; Peter H. Brigham, Boston.

—At the annual meeting of the Hamilton & Lake Erie Railway Company at Hamilton, Ont., May 21, J. Turner, E. Gurney, E. Stuart, J. M. Williams, W. J. Cupp, W. F. Findlay and A. F. Skinner were chosen directors for the ensuing year.

—At a recent meeting of the North Shore Railway Company of Canada, James G. Ross, E. Beaudet, J. B. Renaud, W. Russell, Col. Rhodes, T. H. McGreevy, J. Burstall and A. Thompson were chosen directors. Mr. J. G. Ross is to be President in place of Mr. E. Cauchon.

—The new officers of the Whitby & Port Perry Railroad Company are as follows: President, James Austin, of Toronto, Can.; Vice-President, J. Michie; Managing Director, James Holden, Whitby, Can.; directors, C. Draper, A. Ross, E. Major and John Dryden.

—At the annual meeting of the Salt Lake, Sevier Valley & Pioche Railroad Company in Salt Lake City, Utah, May 13, the following were elected directors for the ensuing year: P. Edward Connor, H. P. Kimball, T. P. Akers, E. M. Barnum, H. S. Jacobs, W. R. Judd, John Rowberry, Amos Woodward, Abel Parker and John Cunningham. The board organized by the election of the following officers: H. S. Jacobs, President; P. Edward Connor, Vice-President and Treasurer; E. M. Barnum, Secretary, and H. P. Kimball, General Superintendent.

—The new board of directors of the Detroit & Bay City Railroad Company has elected the following officers: President, James F. Joy, Detroit, Mich.; Managing Director, H. H. Smith, Jackson, Mich.; Secretary, J. E. Howard, Detroit, Mich.; Treasurer, Isaac Livermore, Boston.

—Mr. H. B. Rue has been appointed General Superintendent of the Cayuga Lake Railroad. Mr. Rue was formerly in the employ of the Erie.

—Mr. Thomas Jackson, late Division Engineer on the Wilmington & Western Railroad, has been appointed to a position in the Engineer Department of the Pittsburgh, Fort Wayne & Chicago road.

—The stockholders of the Omaha & Lake Pepin Railroad Company met at Rochester, Minn., recently and elected the following board of directors: C. H. Chadbourn, E. C. Cross, H. T. Horton, T. H. Titus, G. W. Van Deusen, Rochester, Minn.; A. Y. Felton, O. Wilcox, H. P. Wilson, Plainview, Minn.; George Bryant, D. A. Hart, Elgin, Minn.; George McDougall, W. S. Walton, Wabashaw, Minn.; T. H. Armstrong, High Forest, Minn. The board organized by the election of the following officers: President, H. T. Horton; Vice-President, O. Wilcox; Secretary, T. H. Titus, Rochester, Minn.; Treasurer, C. H. Chadbourn.

—Captain Douglas Pope has been appointed Auditor of the Gilman, Clinton & Springfield Railroad Company, in place of Joseph Lane, resigned.

—At the annual meeting of the Denver Pacific Railway Company, at Denver, Col., May 5, the old board of directors was re-elected, as follows: Robert E. Carr, John Pierce, B. W. Lewis, Alfred Sayre, J. E. Bates, C. S. Greeley, J. P. Devereux and F. W. Cram. The board re-elected all the old officers, as follows: President, R. E. Carr; Vice-President, John Pierce; Secretary, R. R. McCormick; Treasurer, D. H. Moffatt, Jr.

—At the annual meeting of the Denver & Boulder Valley Railroad Company at Denver, Col., recently, Jerome B. Chaffee, W. S. Cheesman, C. B. Lamborn, B. W. Lewis, R. R. McCormick, J. P. Devereux and Robert E. Carr were chosen directors. The only new member of the board is R. E. Carr, who takes the place of John Evans. The board re-elected the old officers, as follows: President, Jerome B. Chaffee; Secretary, R. R. McCormick; Treasurer, D. H. Moffatt, Jr.

—At the annual meeting of the Stockholders of the Suncook Valley Railroad Company at Manchester, N. H., May 22, the following board of directors was elected: S. N. Bell, Frederick Smith, M. V. B. Edgerly, Manchester, N. H.; Natt Head, Hooksett, N. H.; L. B. Towle, Epsom, N. H.; C. H. Carpenter, Chichester, N. H.; R. L. French, Pittsfield, N. H.

—At the annual meeting of the Suncook Valley Extension Railroad Company at Manchester, N. H., May 22, the following board of directors was elected: S. N. Bell, Frederick Smith, J. N. Colbath, Manchester, N. H.; Natt Head, Hooksett, N. H.; Thomas Cogswell, D. E. Tuttle, James M. Durgin.

—A meeting of the subscribers to the stock of the Central Vermont Railroad Company, which is to be the successor of the Vermont Central, was held in St. Albans, Vt., May 21, and the company was organized by the election of the following board of directors: J. Gregory Smith, Worthington, C. Smith, St. Albans, Vt.; Trenor W. Park, John McCullough, Bennington, Vt.; John B. Page, Rutland, Vt.; James R. Langdon, Montpelier, Vt.; Joseph Clark, Milton, Vt.; Benjamin P. Cheney, Boston, Mass.; W. Butler Duncan, S. L. M. Barlow, John Q. Hoyt, George A. Brown, John S. Shultz, New York. Of these Messrs. J. G. Smith, W. C. Smith, Page, Clark, Langdon and Cheney may be said to represent the old Vermont Central interest, and Messrs. Duncan, Barlow, Brown, Hoyt, Shultz, McCullough and Park the New York, Boston & Montreal interest, which latter has a majority in the board.

—At the annual meeting of the Easton & Amboy Railroad Company at Camden, N. J., May 8, the following board of directors was elected: Asa Packer, Mauch Chunk, Pa.; Robert H. Sayre, Bethlehem, Pa.; Charles Hartshorn, J. H. Lyon, H. E. Packer, J. G. Fell, Samuel Thomas, E. M. Patterson, of Philadelphia; T. N. McCarter, of Newark, N. J. Hon. Asa Packer was elected President, and Charles Hartshorn Secretary and Treasurer. Nearly all the members of the board are directors or officers of the Lehigh Valley Railroad Company. This is the company which is building the Lehigh Valley Company's line across New Jersey.

—At the annual meeting of the Vicksburg & Meridian Railroad Company in Vicksburg, Miss., May 5, the following board of managers was elected: Dr. M. Emanuel, Thomas Rigby, A. B. Reading, William E. Morris, J. C. Stanton, J. A. Klein, B. R. Thomas, T. Anderson, Thos. M. Smedes, Jas. R. McDowell and William Crutcher. Mr. Thomas takes the place of T. S. Dabney, the others being re-elected. The board re-elected the old officers, as follows: Dr. M. Emanuel, President; Thomas Rigby, Vice-President; N. G. Bryson, Secretary and Treasurer. The Executive Committee is composed of the President, Vice-President, and Messrs. Morris, Anderson and Crutcher.

—A correspondent furnishes us with a corrected list of the directors elected at the annual meeting of the Cheshire Railroad Company held in Keene, N. H., May 14. The list is as follows: E. Murdock, Jr., Thomas M. Edwards, Samuel Gould, Sohn Henry Elliott, Isaac M. Murdock, William A. Brigham, George E. Williams. In our report (published last week) the name of E. Murdock, Jr., was omitted and that of W. A. Brigham was printed Bingham.

—Captain Howard Schuyler, Chief Engineer of the Denver & Rio Grande Railway, has resigned his position to accept an appointment as Chief Engineer and Manager of the North Pacific Coast Railroad of California.

—At the annual meeting of the Milwaukee, Lake Shore & Western Railroad Company in Manitowish, Wis., recently, the old board of directors was re-elected, as follows: J. Vilas, Jacob Leups, J. D. Markham, M. Fallows, Manitowish, Wis.; J. S. Buck, B. Douglas, Appleton, Wis.; W. Elwell, J. H. Mead, Sheboygan, Wis.; H. Mann, F. W. Cotzhausen, Milwaukee, Wis.; J. W. Vail, Port Washington, Wis. The board subsequently re-elected the old officers, as follows: President, J. Vilas; Vice-President, H. Mann; Secretary, C. Luling; Treasurer, C. G. Barnes; Attorney, F. W. Cotzhausen; Chief Engineer, H. G. H. Reed.

—Mr. C. De Clerk, formerly employed as Superintendent of Construction on the New Jersey Midland, has been appointed Track Master of the New York & Oswego Midland road from Jersey City to Walton, N. Y., about half the road.

—At the annual meeting of the Georgia Railroad Company at Augusta, Ga., May 14, Mr. John P. King, of Augusta, Ga., was re-elected President, with the old board of directors, as follows: E. E. Jones, Thomas J. Birney, D. E. Butler, Madison, Ga.; Edward R. Ware, Stevens Thomas, James S. Hamilton, Athens, Ga.; Antoine Poullain, James W. Davis, Josiah Sibley, George T. Jackson, M. P. Stovall, William M. Reese, Augusta, Ga.; L. M. Hill, W. W. Clark, Washington, Ga.; George Hillyer, John Davison, Atlanta, Ga. The board of directors re-elected E. W. Cole General Superintendent and S. K. Johnson Superintendent.

—At the annual meeting of the New York & Harlem Railroad Company in New York, May 20, the following board of directors was elected: William H. Vanderbilt, Cornelius Vanderbilt, Horace F. Clark, W. C. Wetmore, Augustus Schell, A. B. Baylis, James H. Banker, Joseph Harker, John B. Dutcher, R. J. Niven, C. M. Meserole, H. Allen and Cornelius Vanderbilt, Jr.

—At the annual meeting of the Niagara River & New York Air Line Railroad Company at Lockport, New York, May 13, the following board of directors was elected: J. W. Helmer, L. F. Bowen, A. F. Brown, B. H. Fletcher, M. W. Evans, H. H. Goff, D. S. Morgan, James Palmer, John Barry, Chas. H. Moore, I. H. Royce, W. H. Watson, Wm. Hadley. The directors subsequently elected J. W. Helmer, President; D. S. Morgan, Vice-President; E. Kirk Hart, Treasurer; M. W. Evans, Secretary.

—The annual meeting of the United New Jersey Railroad & Canal Company (the successor of the Camden & Amboy and New Jersey Railroad and Delaware & Raritan Canal companies) was held in Trenton, N. J., May 27, and re-elected the old board of directors, as follows: William G. Cook, John G. Stevens, Ben-

Jamin Fish, Robert A. Stockton, Trenton, N. J.; A. L. Dennis, Nehemiah Perry, Newark, N. J.; Isaac W. Scudder, Jersey City, N. J.; Ashbel Welch, Lambertville, N. J.; Hon. Hamilton Fish, Cambridge Livingstone, John Jacob Astor, New York City; Samuel Welsh, Philadelphia. Mr. J. W. Allen was appointed director on the part of the State some time since.

At the annual meeting of the Concord Railroad Company at Concord, N. H., May 27, the following board of directors was elected: Wm. A. Tower, John E. Lyons, Onslow Stearns, James W. Johnson, Frederick Smyth, Joseph P. Pitman, John A. Spaulding. Of these Messrs. Lyons, Stearns and Pitman are new directors.

The directors of the Central Vermont Railroad Company have elected John Gregory Smith President and Worthington C. Smith Vice-President, thus putting at the head of the new company two of the men most prominently connected with the old Vermont Central administration.

At the annual meeting of the Petersborough Railroad Company at Nashua, N. H., May 26, the old directors and officers were re-elected, as follows: James Scott, Granville P. Felt, Petersborough, N. H.; George A. Ramsdell, Solomon Spaulding, Gilman Scripture, Josiah G. Graves and Albert McKean, Nashua, N. H.; Clerk, Gilman O. Shattuck; Treasurer, Theodore H. Wood.

The Tallahassee (Fla.) *Sentinel*, of May 24, says: "Mr. F. B. Papy, Superintendent of the Jacksonville, Pensacola & Mobile Railroad, has resigned that position, and is succeeded by Col. James S. Gibbs, of Quincy. It is understood that Mr. Papy is to continue as Superintendent of the Florida Central (from Lake City to Jacksonville), the two roads having separate managements."

The twenty-seventh annual meeting of the Boston, Concord & Montreal Railroad Company was held in Plymouth, N. H., May 26, and the old board of directors re-elected, as follows: A. H. Tilton, Tilton, N. H.; Joseph P. Pitman, Laconia, N. H.; John L. Rix, Haverhill, N. H.; J. W. Lang, Meredith, N. H.; John E. Lyon, Peter Butler, John A. Parks, Boston.

The annual meeting of the Missouri, Kansas & Texas Railway Company was held in Parsons, Kan., May 22, and the old board of directors re-elected, as follows: Levi Parsons, Francis Skiddy, L. P. Morton, J. Pierpont Morgan, Erastus Corning, George Denison, Sheppard Gandy, Hezron A. Johnson, David Crawford, Jr., J. B. Dickinson, New York; R. S. Stevens, J. R. Barrett, Sedalia, Mo.; B. P. McDonald, Fort Scott, Kan. The officers of the company for the ensuing year are: President, Levi Parsons; Vice-President, George Denison; Treasurer, David Crawford, Jr.; Secretary, H. B. Henson; General Manager, R. S. Stevens; Chief Engineer, O. B. Gunn; General Superintendent, W. H. Woodward; Land Commissioner, Isaac T. Goodnow; General Freight Agent, W. P. Robinson; General Ticket Agent, J. D. Brown.

OLD AND NEW ROADS.

Changes of Time at New York.

On most of the leading lines from New York the summer times tables took effect May 26.

On the New York, New Haven & Hartford, an additional express train was put on between New York and Boston, running by way of Springfield. The new train leaves either end of the line at 10 a. m., and makes the distance (234 miles) between the two cities in 7½ hours, or an hour less than the fastest train hitherto run. There is considerable change in the local trains, and several additional ones are put on, notable among which is one leaving at 11:40 p. m., and running to Portchester (27 miles), which is doubtless a great accommodation.

On the New York Central & Hudson River, the special Chicago express leaves at 10 a. m., instead of 10:30. The first Pacific express, which left at 6 p. m., is replaced by a train leaving at 7 p. m., with sleeping cars to Watertown and Canandaigua, N. Y., and the second Pacific express leaves half an hour later than formerly, at 8:30 p. m. The principal change in the local trains is that the special way trains from Thirtieth street, which formerly ran to Yonkers, now go to Tarrytown, 10½ miles further up the line. The Saratoga express trains have not yet been put on.

On the Erie, no change is made in the time of departure of the express trains. The first night express, which was dropped last fall, has not been resumed, as was expected, and the only night train leaves at 7 p. m. The number of local trains have been decreased instead of being increased as is usual in the summer, and the residents along the line generally express much dissatisfaction with the new time table.

On the New York Division of the Pennsylvania road, no change has been made in the leaving of the Washington and Western trains, and none of importance in the arriving time, except that the Southern Express (via Pittsburgh) arrives at 3:40 p. m. Between New York and Philadelphia a new train has been put on, known as the "Newspaper train," which leaves New York at 3:30 a. m., for the purpose of carrying the New York papers to points along the line. A similar train was put on the Hudson River road some years ago, but was not kept on very long. One additional train leaves Philadelphia for New York at 1 p. m. Little change has been made in the local trains, the local traffic on this line varying very little throughout the year.

The Long Island and South Side roads have put on additional trains, but the Boston Express (by way of Greenport and Stonington) on the Long Island has not yet commenced running. The New Jersey Central and Delaware, Lackawanna & Western have not yet adopted their summer schedules.

Railroad Legislation in Minnesota.

Among the laws passed by the Legislature of Minnesota at its recent session were the following:

"An act to establish the location of the general offices of railway companies, chartered under the laws of this State." This act provides that every company chartered by the State must keep its general offices, or a branch office where any business pertaining to the general offices can be transacted, at some point in the State.

"An act to authorize non-resident railroad companies to build railroads in Minnesota." This provides that any company organized under the laws of Iowa can extend its road into Minnesota, on complying with the laws of Minnesota as to filing and recording its articles of incorporation and establishing an office in the State.

"An act to provide for the collection of taxes against railroad corporations."

Homer & Burnside.

There is a talk of building a railroad from Homer, Pa., on the Indiana Branch of the Pennsylvania Railroad, northeast to Burnside in Clearfield County, a distance of about 30 miles.

Railroad Assessments in Kansas.

The State Board of Assessors of Kansas met recently, and fixed the valuation of the different railroads in the State for purposes of taxation, as follows: Missouri, Kansas & Texas, \$4,700 per mile; L. Avenworth, Lawrence & Galveston, \$5,300; Missouri River, Fort Scott & Gulf, \$7,222; Central Branch, Union Pacific, \$1,000; Atchison, Topeka & Santa Fe, \$5,000; Kansas Pacific, \$7,900; Leavenworth, Atchison & Northwestern, \$7,250; St. Louis, Lawrence & Denver, \$4,000; Missouri River, \$8,000 (the last three roads are operated by the Missouri Pacific Company); Atchison & Nebraska, \$1,779; St. Joseph & Denver City, \$4,700; Lawrence & Southwestern, \$3,500; Wathens & Don-

phan, \$3,000; Junction City & Fort Kearney, \$3,000; Kansas Central, \$3,000.

Railroad Legislation in Ohio.

Among the laws passed by the Legislature of Ohio at its late session were the following:

Supplementary to the Boesel railroad act.
To amend Section 12 of the Boesel railroad act.
Prescribing the mode of ratifying by stockholders of propositions to lease railroads.

To prevent frauds in the use of railroad tickets.
Fixing penalties for refusal or failure of a president or other executive officers of a railroad company to report fully to the Commissioner of Railroads.

Limiting rates of freight and passenger transportation on railroads.

To authorize boards of county commissioners to contract with railroad commissioners for the use of bridges.

To authorize the purchase of unfinished railroads, and to complete the same.

To make more efficient the reports of railway and telegraph companies.

Charlotte, Columbia & Augusta.

Some time since the city of Augusta, Ga., subscribed \$100,000 to the stock of this company, on condition that the shops of the road should be located in Augusta. The shops were built elsewhere and the city brought suit to recover its subscription. The suit has just been compromised and a verdict taken by agreement of both parties. The railroad company agrees to return to the city \$88,800 of the bonds issued by the municipal corporation for stock in that road by the first day of January, 1889—said bonds to be taken at par. On the surrender of the bonds the city is to turn over its stock, amounting to \$100,000, to the road. In the meantime, however, the Charlotte, Columbia & Augusta Railroad Company binds itself to pay the interest of 7 per cent. on the original subscription of \$100,000 made by the city. The right of the company to lay tracks across certain of the streets in the city is conceded.

Delaware River & Lancaster.

The final location of this road is to be made at once so that the contracts can be let. The road is to extend from Lancaster, Pa., northeast to a connection with the National Railway in Bucks County.

Ebensburg & Oresson.

It is stated that this branch of the Pennsylvania Railroad is to be extended from Ebensburg west eight miles to the Blacklick coal fields.

Missouri, Kansas & Texas.

The track on the extension from Sedalia, Mo., to Moberly (53 miles) is all laid, and as soon as the bridge over Lamine River (which fell a short time since while being put up) is completed, trains will commence running. The bridge over the Missouri River at Boonville will not be completed before January. Meantime the transfer across the Missouri will be made by steam ferry.

The troubles between this company and the Houston & Texas Central, as to exchange of freight at Denison, Tex., have, it is said, been settled and freight is now transferred without delay. The stock yards at Denison are being enlarged.

Mississippi Central Extension.

A correspondent writes that though grading on this line was begun last September, the extraordinarily severe winter and the wet spring have caused progress to be slow. But about 17 miles of track has been completed from Jackson, Tenn., northward, and work is being vigorously pushed thence to Milan, about ten miles further, where a junction will be made with the Memphis line of the Louisville & Nashville Railroad. A large force of men and teams is also engaged between Milan and Cairo, about 80 miles. Sheehan & Loler, of St. Louis, have the contract for 30 miles from Cairo southward.

Toledo, Wabash & Western.

It is reported that this company will withdraw from Quincy and make Hannibal its only Mississippi terminus, in connection with the Hannibal & St. Joseph. The junction of the Hannibal and Quincy lines is at Bluffs, Ill., 50 miles east of Hannibal and 62 miles east by south from Quincy. But the Toledo, Wabash & Western owns the Quincy line only from Bluffs to Camp Point, 40 miles. From Camp Point to Quincy, 22 miles, it hires the use of the road jointly with the Chicago, Burlington & Quincy, paying \$40,000 per year for its share. Its main connection at Quincy is the Hannibal & St. Joseph, which is also reached at Hannibal, and business from the Mississippi Valley & Western road could also be got equally well, perhaps, at Hannibal, but not that from the Quincy, Missouri & Pacific, while Quincy has a large traffic of its own.

Elevations on a Peruvian Railroad.

An engineer recently returned from Peru gives the following table of the distances from the port of Callao and elevations above the sea of the leading stations on the Callao, Lima & Oroya Railroad.

Miles from Callao.	Elevation above sea level, ft.
Callao	441
7½ Quilca	808
13½ Quilca	2,801
18½ Santa Clara	1,313
23½ Chosica	2,801
28½ Cocachacore	4,588
33½ San Bartolome	4,905
38½ Agua Varrugas	5,840
43½ Luroco	6,655
48½ Matucana	7,758
53½ San Mateo	10,530
58½ Tunnel on le clima	15,645
63½ Yauli	13,420
68½ Oroya	12,178

This shows an average grade of very nearly 150 feet per mile for the 104½ miles from Callao to the summit, and of 190 feet per mile for the 27 miles from Agua Varrugas to the summit.

Shepard Valley.

A bill has passed the Connecticut Legislature and waits only the signature of the Governor, which authorizes a reorganization of the company in the interest of the second-mortgage bondholders. The road extends from Litchfield, Conn., to Hawleyville, 32½ miles, and the traffic on it has been barely large enough to pay the running expenses.

History of Legislation on the Hoosac Tunnel Route.

The Boston *Advertiser* of the 23d gives the following account of the projects proposed in the Massachusetts Legislature for the utilization of the Hoosac Tunnel:

"It might be of interest to state here the situation of affairs at the beginning of the session. The first proposition prior to the convening of the Legislature, looking to the management of the Tunnel Route, was the agreement made between the Lowell and the Fitchburg roads to consolidate. The plan agreed on was that the two roads should unite, the present boards of directors to form the directors of the consolidated corporation, General Stark, of the Lowell road, to be the President, and President Stearns, of the Fitchburg road, to be Vice-President, receiving no pay for that office, but having a salary as the Engineer of the line. The roads were to have six years in which to unite and ten years to lease the connecting roads west. Such, in brief, were the arrangements between these roads, by which they aimed to secure control of the tunnel and its con-

nections. The Vermont & Massachusetts road refused to assent to this arrangement, and offered the bill presented at the beginning of the session, providing for the consolidation of the various roads forming the tunnel line between Boston and Troy. This was the bill which was referred to the Committee on Railways, which held one of the most protracted hearings in the history of the Legislature. The bill agreed on between the Fitchburg and the Lowell roads and the bill favored by the Vermont & Massachusetts and the Troy & Boston roads were the principal ones considered, and it was thought that between these the Committee would decide, though the Railroad Commissioners and others favored State control; Edward Crane presented his Trust Company scheme, and the Massachusetts Central and Great Northern lines were heard at length. The majority of the Committee, however, reported a bill embodying substantially both the bills presented by the Vermont & Massachusetts and the Troy & Boston, and of the Lowell and the Fitchburg roads, while the minority of the Committee reported a bill incorporating the State trustees of the Hoosac Tunnel Railroad, to be controlled and operated by the State. Soon after the reporting of the bills, the public was surprised to find the Fitchburg road bitterly hostile to the majority bill, and a warm advocate of State control, the inducement of an annual pension of 8 per cent. and freedom from anxiety in the future having proved strong enough to gain its assent to retire to a sort of old ladies' home for railroads."

Hamilton & Northwestern.

Hamilton, Ont., has granted a bonus of \$100,000 to this projected road.

Credit Valley.

This new line is located from Toronto, Ont., southwest 35 miles to Campbellville, with a branch from Streetsville northwest 30 miles to Alton, and portions of the line are being graded. An extension from Alton to Orangeville is to be surveyed. It is proposed also to extend the line from Campbellville southwest to St. Thomas, on the Canada Southern.

Cheap Trains.

The Boston *Railway Chronicle* says: "The increase in the travel on the working-men's trains on the Saugus Branch of the Eastern Railroad has been much greater than the railroad officials or the friends of the cheap train system anticipated. The number of passengers carried between Lynn and Boston for six days ending May 10 was 4,513. This is an increase of 1,559 over the same number of days in March. The largest number on any one train was 467, the smallest 266, and the average per day 752. Six cars are now run on the train each way, and another car will soon be added."

New Jersey West Line.

Two years ago Judge Asa Packer was chosen President of this company with a majority of the directors in his interest, and it was understood that the road was to be speedily completed and used as the eastern outlet of the Lehigh Valley road. A majority of the stock is owned by the towns of Bedminster and Bernard in Somerset county, and New Providence in Union county. Last year an entirely new board was chosen, and Judge Packer and his friends left out. The new board has done nothing on the road and the people of the towns are now anxious that last year's work shall be undone and the road again placed in the hands of the Lehigh Valley people. It seems doubtful, however, if they will be willing to take it, as they have secured a charter for a line across New Jersey (the Easton & Amboy) and have spent a large amount of money on it and have purchased a large tract of land at Perth Amboy for a terminus.

The completed portion of the West Line road extends from Summit, on the Morris & Essex, west about 16 miles to Bernardsville. A good deal of work has been done on the grading from Summit east to Waverly on the New Jersey road, and some west of Bernardsville. The towns which have issued their bonds and are paying interest on them are very anxious to see some movement made toward the completion of the road.

Canada Pacific.

It is stated in Montreal that Sir Hugh Allan and colleagues have succeeded in making arrangements in London for the immediate supply of a large portion of the capital required for building this road. The remainder to be furnished as the work proceeds.

The St. Croix Land Grant.

Governor Washburn of Wisconsin has formally proclaimed a forfeiture of the grant by the Milwaukee & St. Paul Company. The grant is now open to any company willing to subscribe to the conditions of the act granting the land for railroad purposes. It is not thought likely that any company will be willing to accept it under the onerous conditions imposed by the Wisconsin Legislature.

Atlantic & Pacific.

The Santa Barbara (Cal.) *Press* says: "It may take some of our readers by surprise to learn that a gang of men is now at work in the Soledad Pass, grading on the line of the Atlantic & Pacific Railroad; but such is the fact. The Engineer-in-Chief is in town, just from the scene of operations, where he has been to make the final survey and locate the route."

The Soledad Pass is one of the principal passes through the Coast Range in Southern California, and is nearly due west of Santa Barbara, and about 100 miles northwest of the San Geronimo Pass, through which the Texas & Pacific is to run. If the company is really grading its road there, it is probably done to secure possession of that line, in preparation for future work. No work, we believe, is now being done on the eastern end of the line.

Danville, Tuscola & Western.

Mr. J. B. Brown, of Chicago, has taken the contract for completing the grading of this road, which has been so far constructed by his late brother, Leverett Brown. The Crescent Improvement Company has the contract for ironing and equipping the road.

Meetings.

The Chicago, Danville & Vincennes elects directors at its office, No. 299 West Randolph street, Chicago, June 18.

The annual meeting and election of the New York Central & Hudson River Railroad Company will be held in the Union Depot at Albany, June 4.

Union Pacific.

The Attorney-General of the United States has filed his bill in the suit directed by Congress to be brought against this company, the Credit Mobilier, and a very large number of individuals, chiefly those concerned in this company or their contracts during the construction of the Union Pacific. The object of the suit is expressed in paragraph 47 of the bill, which consists of prayers for special and general relief, requiring the Union Pacific Railroad Company to account for all grants of the United States; declaring all property granted by acts of Congress a trust fund; declaring the Hoxie, Ames and Davis contracts fraudulent; declaring the land grant and income bonds unlawfully issued; to ascertain the price and consideration for everything; that all parties who subscribed for but did not pay full value for stock, be decreed to return the property to the company; requiring the payment in full for the stock in money; that first mortgage land grant and income bonds be surrendered to the company and canceled, and all the

stock issued by the company which has not passed into the hands of bona fide purchasers without notice, the par value of which cannot be collected in money shall be decreed to be surrendered to the company and canceled; that the trustees under the Ames and Davis contracts be declared jointly and severally bound to pay to the Union Pacific Company in money and make good to the said company the whole amount of bonds and stock improperly issued to them; that all defendants who secured from the Union Pacific Company, directly or indirectly, through or by the Credit Mobilier, or pretended trustees under the Ames or Davis contract, any bonds or stocks of the company in the way of a dividend, distribution, allotment or otherwise, may be decreed to be jointly and severally responsible therefor, and pay the amount thereof to the said railroad in cash. The financial condition of said company may be declared to be reformed, so that the actual cost and fair price of the construction and equipment over and above the amount of the proceeds of the United States bonds issued to said company shall be represented only by stock fully paid, or, if this cannot be done, that any excess of the cost and fair price over the price of the United States bonds and of uncanceled, fully paid stock, shall be represented by the first-mortgage bonds of said company, and all excess of stock and of first-mortgage bonds shall be canceled, and all income bonds and land-grant bonds and mortgages and trusts made by the Union Pacific Railroad Company with reference to said land grant bonds and income bonds be decreed to be canceled; that an account be taken of the sums improperly expended or expended for improper purposes by authority of defendants, herein before specially named, out of the assets of said company, and that they be required to return the same to the treasury of said company, with interest; that Bushnell be decreed to account for the value of any and all property disposed of by him, the profits realized from the same, &c.; that the Union Pacific Railroad Company be enjoined from making or permitting to be made any use of its revenues, receipts and credits which shall disable them from paying interest from time to time as it shall mature on the first-mortgage bonds of the company, from paying interest or principal on any first-mortgage, land-grant or income bonds which were distributed as dividends or allotments of profit to shareholders in any way, from making, issuing, selling, or in any way pledging or disposing of any sinking fund or other bonds under the act for the issue of \$16,000,000, on account of a sinking fund, or from in any way disposing of any other stock or bonds of the company, or from making any contracts without reporting the same to this Court and obtaining its confirmation; that Durant, Ames, Alley, Dillon, Bushnell, McComb, Bates and Duff be enjoined from any transfer, sale, or other disposition of bonds or stock of the company held or controlled by them; that all the defendants be enjoined from disposing of the property received by them in the way of dividends or allotments; that the Credit Mobilier corporation be enjoined from the disposition of such stocks or bonds of the Union Pacific and from any transfer, sale, or distribution among its stockholders of the assets of any kind belonging to said company. That the Atlantic & Pacific Telegraph Company, the Wyoming Coal & Mining Company, the Omaha Bridge Transfer Company be similarly enjoined and prevented from making further contracts without reporting to this Court; that all defendants in this suit be enjoined from receiving any interest or dividends directly or indirectly on bonds or stock received as profit or allotments under the Hoxie, Ames and Davis contracts; that the Union Pacific Company be enjoined from paying any pretended balance under the Hoxie contract, and also from paying their said note for \$2,000,000; that the Union Pacific Company be enjoined from making any further payments to and from transferring or delivering any profits to the company or so-called trustees under the Ames contract and Davis contract on account of any pretended balance due, and that the said defendants be enjoined from taking any legal steps for collecting the balances.

The day after the publication of this bill, the stock fell from 30½ to 25½, though there is absolutely nothing in it but what was expected.

Peninsular, of Michigan.

A meeting of the stockholders of this company will be held at Battle Creek, Mich., July 30, at 2 p. m., for the purpose of considering and deciding upon an agreement made by their directors with the directors of the Port Huron & Lake Michigan Company for the consolidation of the two companies. To connect their two roads it will be necessary to construct a line from Lansing, Mich., east by north about 50 miles to Flint. With this and with the extension of the Peninsular in Indiana to Valparaiso, where it is to connect with the Pittsburgh, Fort Wayne & Chicago, and with running rights over that road into Chicago, which we believe have been agreed upon, the consolidated company would be able to run trains through between Chicago and Port Huron, by a short route, and at the latter place make connection with the Grand Trunk and Great Western of Canada. The country through which the line passes is so cut up by railroads that local traffic at best must be much divided, and the local markets, both for buying and selling of most of the country through which the line runs are at Detroit and Toledo, and cannot well be reached by this line.

Denver & Rio Grande.

A correspondent of the Chicago Tribune complains of the charges on this road, saying that it costs \$17 to ride from Colorado Springs to Canon City, 90 miles, or nearly 20 cents a mile; while to carry coal 45 miles, from the mines to Pueblo, the charge is \$5 per ton, or 11 cents per ton per mile. These are big prices, certainly, but then the people who use a railroad must pay its expenses and interest on its cost, and if there are very few of them, as in Colorado, they must pay the more.

Legality of Overissues of Erie Stock.

Attorney-General Barlow sent in his opinion, called for by a resolution of the lower house of the New York Legislature, as to the legality of the payment of dividends by the Erie Railway Company in their overissue of stock. The Attorney-General thinks the payment illegal, but sees no remedy for it, owing to the difficulty of distinguishing between the true and fraudulent stock. He says: Before such a state of facts there can be no doubt that the transaction and the issuing of the bonds and their conversion into stock was illegal, fraudulent and void. The statute contemplates a bona fide borrowing of money upon bonds for certain specified purposes, and the element of convertibility into stock was added as a mere means of increasing the value of the bonds; but there is difficulty in reaching a remedy. He then proceeded to show that it would not now be possible to discriminate which is the stock tainted and which is not. The difficulty, he says, is not in the law of the case, but in the facts, or rather in the proof of the facts. He has no hesitation in saying that the company cannot rightfully pay these dividends on such fraudulently issued stock as can be identified and traced into the hands of persons who took it with knowledge of the fraud. But the difficulties of proof above referred to are so great that such a suit would be practically useless. The same difficulty is stated to be in the way of action concerning the over-issue of convertible bonds, and though he is of opinion that a suit would fail of any practical results, still he says he will cheerfully undertake it if directed by the Legislature. He also suggests that even if this stock were canceled the dividends would amount to the same, as there is no law limiting the dividends which railroad corporations are allowed to pay to any percentage on the capital stock. The company could and would exact the same rate of fare and pay increased dividends on the di-

minished aggregate of stock. He closes by saying the only remedy for such violations of the law, if it can be called a remedy, is the criminal punishment of the guilty officers of the railroad, and the summary proceedings of a forfeiture of the charter; and it is, no doubt, competent for the Legislature to limit by law the scales of fare and freight, and thus effectually set bounds to the amount of dividends which shall be paid on this stock.

Northern Pacific.

The track-layers on the western end of the Dakota Division have reached a point within 20 miles of the Missouri River.

Grand Rapids & Indiana.

In the suit brought by the city of Kendallville, Ind., to recover \$83,000 on bonds issued to this road, on the ground that the conditions had not been complied with by the company, a compromise has been made. The Continental Improvement Company (which built and operates the Grand Rapids & Indiana road) is to surrender to Kendallville the \$83,000 city bonds, and the city is to pay \$25,000 in ten years, with 6 per cent. interest, and to assign the \$85,000 of stock in the Grand Rapids & Indiana Railroad issued to them in lieu of their bonds. This agreement will have to be ratified by the City Council of Kendallville.

Dillsburg & Mechanicsburg.

The Cumberland Valley Company has assumed control of this road, according to the contract between the two companies.

Allegheny Valley.

This company has purchased eight acres of land in Pittsburgh and will at once put up extensive passenger and freight depots.

Tuscola, Charleston & Vincennes.

A correspondent informs us that the contract for grading the line of this road from Charleston to Danville, Ill., about 55 miles, has been let to J. B. Brown, of Chicago. The Crescent Improvement Company, of New York, of which Charles L. Frost is President, has taken the contract for ironing and equipping the road. The contractor has begun work on the grading.

Texas & Pacific.

Track is laid to Eastport, 23 miles from Dallas, Tex. The lessees of the Texas Penitentiary have put a large force at work for the company on the track between Jefferson and Marshall.

Hudson Tunnel Railroad Company.

This company filed its articles of association with the Secretary of State of New Jersey May 26. The road is to begin at a point in or near Jersey City or Hoboken, and proceed thence by the most eligible route under the bed of the Hudson River to New York. The capital stock is to be \$3,000,000, and the estimated length of the road two miles. A bill granting a charter to the company is now before the Legislature of New York.

Concord.

At the recent annual meeting there was a lively contest in the election for directors, which finally resulted in the election of a board understood to be favorable to a consolidation with the Boston, Concord & Montreal. The Concord Railroad extends from Nashua, N. H., north to Concord, 35 miles, and its consolidation with the Boston, Concord & Montreal would bring the southern terminus of the latter to Nashua. Such a step would appear to be mutually advantageous, as the two roads are parts of the same line. The Concord Company also leases the Concord & Portsmouth road, from Manchester to Portsmouth, 41 miles; the Manchester & North Weare, 19 miles, and the Suncook Valley, from Suncook to Pittsfield, 17½ miles. There is also, we believe, an agreement as to division of receipts and joint operation with the Manchester & Lawrence Company.

Maine Central.

The suit brought to prevent the construction of the new line on the east bank of the Kennebec from the Kendall's Mills Bridge to Winslow has been withdrawn, on condition that the company pays a sufficient sum to make the wagon bridge at Kendall's Mills free from all tolls.

Indianapolis, Bloomington & Western.

A quantity of iron for the extension of the Monticello branch from Monticello, Ill., to Decatur has been delivered, and the work of track laying will be commenced at once.

Mississippi River Bridge Company.

Articles of consolidation between the Mississippi River Bridge Company, an Illinois corporation, and the Louisiana Bridge Company, a Missouri corporation, have been filed with the Secretary of State of Illinois. The title of the new company is the Mississippi River Bridge Company, and the bridge which it proposes building is at Louisiana, Mo., for the Chicago & Alton road.

Quincy, Missouri & Pacific.

Union township, in Sullivan County, Missouri, has voted to subscribe \$25,000 to the stock of this road.

Grand Trunk.

The following are announced as the improvements to which will be devoted the proceeds of the new issue of stock of this company:

1. Narrowing the gauge of the entire line to four feet eight and one-half inches, to make it accord with the standard American gauge on this continent.
2. To lay steel rails over the whole extent of the line instead of iron.
3. To fully complete the ballasting of the line.
4. To lay about forty miles of additional sidings at various points, to accommodate the increasing traffic.
5. To provide such facilities in the way of extra station accommodation as may be necessary at the different points on the line.
6. To largely increase the existing rolling stock.
7. To build a large and commodious passenger station at Montreal and a grain elevator of the capacity of 300,000 bushels at Sarnia, and, generally, to put the entire system of the Grand Trunk Railway in a first-class condition, both as regards its roadway and rolling stock in every respect.

The narrowing of the gauge from Stratford (the junction with the Buffalo & Sarnia line, which has had a narrow gauge some months) to Montreal is to be made about the 1st of October next. It is reported that the company has ordered 150 new locomotives of the standard gauge, and 5,000 car-trucks to replace the broad ones now under the Grand Trunk cars, and, in addition, 500 new standard-gauge box cars, 200 platform cars and 100 stock cars have been ordered.

It is intended to change the gauge of the line east of Montreal in the summer of 1879, by the end of which year the track is to be renewed with steel. A force is now laying steel rails between Detroit and Port Huron.

Northern Central.

The committee appointed at the annual meeting of the stockholders to consider the question of leasing the road to the Pennsylvania Railroad Company have made a report recommending the lease and giving their reason therefor. In the judgment of the committee, the road has been wisely and economically managed, but its connections are limited and the local business has been so much reduced by the construction of

competing lines, that the road is forced to rely on its through traffic, for a very large part of which it is dependent on the Pennsylvania road. Further, the committee is of opinion that the business of the road cannot be economically or profitably conducted without a large expenditure to provide increased equipment, better terminal facilities in Baltimore, reduced grade at certain points and place the Elmira Division in a condition to do an increased business. The floating debt and other obligations are now as large as is consistent with prudence, and if the improvements needed are made by appropriating for that purpose the surplus earnings the stockholders will receive no dividends for years to come, and the company will suffer from the necessary delay in the completion of the work.

The committee has had a conference with the officers of the Pennsylvania Railroad Company, and while no special anxiety for the lease was manifested, the committee is satisfied that there would be no difficulty in effecting a lease for an annual rental equivalent to 6 per cent. dividend on the stock and the assumption of all indebtedness of the Northern Central Company by the lessee. The committee is therefore of opinion that the lease of the road is the best course open to the stockholders.

Atchison, Topeka & Santa Fe.

A correspondent informs us that this company has ordered an extension of the road from the present terminus at the western boundary line of Kansas for 12 miles up the valley of the Arkansas River, crossing to the south bank of that stream in that distance. This extension is to be in running order by July 5. At the point of crossing the Arkansas River is wide and shallow, with sandy bottom; it will be spanned by a pile bridge, 1,155 feet long.

The location of the road was completed to Pueblo, Col., 148 miles from the present terminus, March 1. For the whole distance the valley of the Arkansas is followed, with easy grades and good alignment, the maximum grade being 26.4 feet per mile, and the least radius of curve 2,865 feet. The average fall in this 148 miles is 8.82 feet per mile. The least fall of the Arkansas River per mile noted is 8.45 feet, and the greatest, 9.80 feet.

Baltimore & Ohio.

The Metropolitan Branch from Point of Rocks, Md., to Washington was opened for travel May 25, and all western trains will now run to Washington over this branch. The distance from Point of Rocks to Washington is 42 miles, the old route by the main line to Washington Junction and thence by the Washington Branch being 91 miles long.

Rockford, Rock Island & St. Louis.

The contractors for the new cross-cut line from Minersville, Ill., to Orion have a considerable force at work on the grading. The track has been laid across the Peoria & Rock Island road at Orion and for a short distance beyond. The new line will be some 18 miles shorter than the present line through Rock Island.

Cairo & St. Louis.

The track is laid to Headquarters, 18 miles north of Murphysboro, Ill., and six miles beyond the last point reported, which was seven miles south of Sparta. The tunnel in Union County near Jonesboro is nearly completed.

Little Rock, Pine Bluff & New Orleans.

The Pine Bluff (Ark.) Press of May 8 reports that the track is laid to Dorris Lake, about three miles from Pine Bluff and 21 miles beyond Varner's, the late terminus.

Naugatuck.

It is reported that this company intends to build a branch from Birmingham, Conn., to New Haven. This branch would be parallel and close to the line of the New Haven & Derby road.

New York & New England.

The bill incorporating this company in Connecticut has passed both houses of the Legislature and needs only the Governor's signature to become a law. The provisions of the bill are the same as that passed by the Massachusetts Legislature.

Chicago & Augusta.

Meetings are being held in Augusta and other places, to advocate the construction of a railroad from Augusta, Ga., by way of Knoxville, Tenn., and Indianapolis to Chicago.

Northern Pacific—Pacific Division.

The contractor on the extension from Tenino, W. T., northward has over 1,000 men at work. Iron enough to lay 23 miles has been received.

Montana papers report that on a recent visit to Helena, Montana, Judge Rice, Vice-President of the company, made a statement that the proposition to build from the mouth of Snake River to Lake Pend d'Oreille had been abandoned. It was also stated that no surveys would be made in Montana this year.

North Wisconsin.

It is said that this road is to be extended some 40 miles northward from its present terminus at New Richmond, Wis., this season. The road now extends from Hudson, on the West Wisconsin, northwest to New Richmond, 14 miles.

Toledo, Canada Southern & Detroit.

A large force is at work on the grading between Trenton, Mich., and Detroit. The bridge over the Ecorse River is completed, and work has been commenced on that over the River Rouge. On the line from Trenton to Toledo, track-laying on the unfinished section is nearly completed. It is expected that the road will be opened about July 1.

Laurens & Asheville.

This company was recently organized at Greenville, S. C. The line proposed is from Laurensville, S. C., the terminus is of the Laurens Railroad, northwest through Greenville to Asheville, N. C., which is to be the terminus of the Western North Carolina road. The length of the line will be about 90 miles.

Ware & Ver.

This road was sold at Ware, Mass., recently under trustees' sale. Mr. C. W. Chapin, President of the Boston & Albany Company, purchased the road for \$350,000. The road extends from Palmer, Mass., northeast 16 miles to Gilbertville and some little work has been done on an extension to Winchendon, 33 miles further. It was, until recently, operated by the New London Northern Company, but lately passed under the control of parties in the interest of the Boston & Albany.

Des Moines Valley.

The Des Moines (Iowa) Register, of recent date, says: "The case of the foreclosure of the second mortgage bonds of the Des Moines Valley road, to be tried at the approaching special term of the Polk County Circuit Court, probably involves a larger amount of money than any other cause ever before set for trial in an Iowa court. The second-mortgage bonds are for \$4,690,000. They are secured by a first mortgage on the road from Des Moines to Keokuk. The suit is brought by the trustees of the owners of the bonds, Messrs. Gillman & Cowdry, of New York. The latter, we believe is President of the road. Messrs. Gatch, Wright & Rannels represent the plaintiffs, and Grant & Smith, of Davenport, assisted by William M. Everts, of New York, represent the first-mortgage bondholders, who ask for the foreclosure of their mortgage at the same time. Their first mortgage amounts to \$2,310,000. Each of the mortgages bears interest at the rate of 8 per cent., and is due—principal and interest—whenever the company fails to pay the interest. None of the interest has ever been paid. In addi-

tion to the two classes of bondholders above named, the Illinois Telegraph Company, the Des Moines River Navigation Company, Flynn, Marcey & Company were made defendants in the original suit. There are also several other creditors that may yet be included at their own request. The aggregate amount of judgments and claims against the railroad company, outside of the mortgages, represented in the action for foreclosure, is about \$125,000. One of the delicate points to be decided at the hearing of the cause will be the position these claims will occupy in the distribution of the proceeds of the sale. At first glance it would seem that the mortgages would be sufficient to hold all the money, unless the road should be sold for more than enough to satisfy them—of which there is no prospect. But some of the claims are said to be in the nature of a mechanic's lien, and still others of some other character that might reasonably be deemed a bar to their refusal, all of which, aside from the vast monetary issues involved, will make the case full of interest. In still another way will the cause excite attention. It is said that the real contestants are the first and second mortgage bondholders—one desiring to have the road sold in order that they may bid it in and operate it; the others being equally desirous to have the present status remain unchanged—they being already in possession. It is also said that the wretched condition of the road, the inconvenient and unprofitable running time now in use, and the lack of proper connections with other roads, is a part of a scheme to so depreciate the value of the property that it can be bought for less than its real worth."

Cincinnati, Hamilton & Indianapolis.

The report of the Cincinnati, Hamilton & Dayton Company thus refers to this road, formerly known as the Cincinnati & Indianapolis Junction:

"Large quantities of cross ties and ballast, with some ten miles of iron, are required for this purpose, besides an addition to the equipment of the road. Five first-class coal burning locomotives have already been purchased, and at this time delivered. One hundred and fifty box and fifty platform cars are being built at Lima, one hundred of these having been delivered. The rolling stock and machinery of the company is in fair condition, and at present consists of 19 locomotives, 9 coaches, 11 baggage and caboose cars, 50 stock cars, 111 platform cars, and 175 box cars. Considerable real estate has been purchased at Indianapolis, and some other lots have been examined for future purchase. It is the desire and expectation of your managers to have this road in good running order for the fall and winter business."

Milford & Bay Shore.

This new Delaware company proposes to build a railroad from Milford, Del., on the Junction & Breakwater road, north to Delaware City, a distance of nearly 50 miles. This line would be parallel with and not more than six or seven miles from the Delaware road.

Worcester & Somerset.

Arrangements are being made for the extension of this road from its present terminus at Newtown, Md., south to Cherry-stone Inlet, Va., a distance of about 65 miles. It is said that the company will construct the road, if the people will give the right of way. The work on the line will be very light.

Duncannon, Bloomfield & Loysville.

The grading of this road is to be put under contract as soon as the work of location can be completed. The road will extend from the Pennsylvania Railroad at Duncannon (15 miles northwest of Harrisburg) west to Bloomfield, about 12 miles.

Maine Central.

About 200 men are at work on the new line on the east side of the Kennebec, from Kendall's Mills to Winslow.

Marshfield & Hardwick.

Surveys are being made for a railroad from Marshfield, Vt., by way of Cabot to Hardwick, a distance of about 13 miles. At Hardwick connection will be made with the Vermont Division of the Portland & Ogdensburg road.

Boston, Clinton & Fitchburg.

This company has completed running arrangements with the Taunton Branch Company. Trains will be run over the Taunton Branch on to the New Bedford road.

The bill authorizing the company to extend the Mansfield & Framingham road from Mansfield to Taunton has been postponed till next year by the Legislature.

Pennsylvania—New York Division.

The Philadelphia Railroad and Mining Register says that the contract for the iron work of the large new depot soon to be erected in Jersey City has been awarded to the Lancaster Manufacturing Company, of Lancaster, Pa.

The new shops west of the Hackensack River are making rapid progress. The walls of the round-house are complete, and the roof trusses are being put up. Two of the shops are nearly complete, another is ready for the roof and the foundations of the erecting shop are laid. A large force is employed and the work is being pushed, as the shops are much needed.

Baltimore, Pittsburgh & Chicago.

Dispatches from Chicago state that the contracts for the Baltimore & Ohio Company's new line to Chicago are let as far as the western line of the State of Indiana. From that point to South Chicago the line has been finally located. From South Chicago to the city the final location has not yet been made. It is said that the company has completed arrangements with the Illinois Central for the use of depot facilities and also for the use of the Central track to some point inside the city limits.

Paducah & Memphis.

A correspondent writes that the track-laying on 37 miles of this road, from Memphis to Covington, has been let to New York parties, who are to complete it by the 1st of July. One locomotive and eighteen flat cars have already been received, and track-laying was commenced at Memphis on the 5th inst. The work will be pushed forward vigorously. President Ex. Norton has just returned from Europe, where he has been to negotiate bonds, and reports everything favorable to the early completion of the road.

St. Paul Pacific.

The Secretary of the Interior has decided that this company is entitled to the land in dispute between it and the Northern Pacific Company. The lands in question were near the intersection of the St. Paul & Pacific Company's St. Vincent Extension and the Northern Pacific at Glyndon, Minn.

Atlanta & Richmond Air Line.

The case of the injunction sought for by the Blue Ridge Company, to stop the construction of this road at certain points, was heard May 10, before Judge Graham, in Charleston, S. C., who dissolved the injunction, except in the proximity of the roads at Hunt House Bank; and by agreement between the officers of the roads, the Air Line road agrees to give a bond in the sum of \$20,000 to secure the Blue Ridge road against any damage at that point. By the terms of the decision, as soon as this bond is filed, the injunction will be considered entirely dissolved.

Richmond & Chesapeake.

The purchasers of the Richmond & York River road at the recent sale have organized a new company by this name. The road is to be put in thorough repair and furnished with new equipment, and a line of steamers put on to run from West

Point, the terminus of the road, to Baltimore. The road extends from Richmond, Va., to West Point, at the head of York River, and is 33 miles long.

International & Great Northern.

Contracts have been let for the construction of 25 miles of road from the present terminus of the International at the Brazos River, south-west into Milam County. The work is to be completed by Aug. 1.

Ohio Valley.

Union township, Brown County, O., has voted to transfer to this company \$75,000 in bonds, voted some time since for the Columbus & Maysville road.

Berks County.

This company has filed in court the necessary bonds to reimburse the Philadelphia & Reading Company for any damage done, and has commenced to lay its tracks through Front and Canal streets in Reading.

The grading between Reading and Lenthartville is nearly finished, and all the material for the bridges has been received. The iron is being delivered, and track-laying will soon be commenced.

The contracts for the grading of the northern half of the road from Lenthartville to Slatington have all been let, and some of the contractors have already commenced work.

Mackinaw & Marquette.

It is reported that the Continental Improvement Company is making arrangements to build this road and take the land grant offered by the State of Michigan to any one who would construct it. The grant amounts to over 1,000,000 of acres. The road is to run from the Straits of Mackinaw to Marquette, on Lake Superior, a distance of about 150 miles. The Continental Improvement Company is the corporation which is constructing and working the Grand Rapids & Indiana Railroad.

Mississippi River.

It is proposed to build a railroad from Austin, Miss., east to a connection with the Mississippi & Tennessee road. The route has not yet been decided on.

Peoria, Atlanta & Decatur.

The Decatur (Ill.) Republican, of May 9, says: "The survey has been made and men are at work on the Peoria end of the route grading and making ready for the iron. Nine car loads of iron for this road were received at this point yesterday. The iron comes from Pittsburgh, Pa., and over the Paris & Decatur Railroad."

Cairo & St. Louis.

A third rail for this road is being laid on the track of the East St. Louis, Cahokia & Falling Springs road from the present terminus of the Cairo & St. Louis at East Carondelet to East St. Louis. As soon as this is completed trains will start from East St. Louis, instead of Carondelet.

Martinsburg & Potomac.

The stockholders have ratified the agreement made with the Cumberland Valley Company.

Hoosac Tunnel.

During the month of April the heading from the east end was advanced westward 163 feet. The west heading was advanced eastward 136 feet, making the total progress for the month 299 feet. The total length opened from the east end westward is 13,798 feet, and from the west end eastward 9,294 feet, a total, up to May 1, of 23,092 feet. There remains to be opened 1,939 feet, being 179 feet more than one-third of a mile.

Wisconsin Central.

The Attorney-General of the State of Wisconsin has prepared an elaborate opinion, to the effect that this company has no right to receive any of its land grant for the road from Stevens' Point north, until the line from Portage to Stevens' Point has been constructed. This is in direct opposition to the opinion of the Attorney-General of the United States, published a short time since. The company announces that it has received the patents for its lands from the General Government, so that the opinion of the Wisconsin Attorney-General or any other man would seem to be of very little account.

Montclair.

Five years ago the township of Pompton, Passaic county, N. J., issued \$100,000 in bonds to the Montclair Railroad Company in exchange for a like amount of the company's bonds. It was the sale of these town bonds which first gave solid foundation to the road, which had hitherto been only a project. Both the Montclair and the New York & Oswego Midland (which guaranteed the bonds) have failed to pay the last half-year's interest on the bonds held by the town, and suit is to be commenced to enforce the payment. It is said that the Montclair Company is bankrupt, and that the road will shortly pass into the hands of a receiver.

Texas & Pacific.

The annual meeting was held at the office in New York May 19, and the reports of the President, Treasurer and Chief Engineer presented. Nearly 400 miles of grading has been done, and the road-bed is nearly complete to Longview from Dallas, from Marshall to Jefferson and Texarkana, and from Marshall to Sherman. The route west of Fort Worth has been thoroughly examined, but not yet definitely located. On the western end the line from San Diego through the San Geronio Pass has been adopted. The contract for building the road has been concluded with a construction company formed for the purpose. The connections of the road are being arranged for. The line from Little Rock (Cairo & Fulton) will be completed in the fall. Arrangements are being made for the completion of the Vicksburg, Shreveport & Texas road from Monroe to Shreveport, and for the construction of the line from New Orleans to Shreveport.

Toledo & Maumee Narrow Gauge.

This company, which filed its certificate of incorporation with the Secretary of State of Ohio May 17, intends to build a narrow-gauge railroad from Toledo southwest to Maumee City, nine miles. The capital stock is to be \$125,000.

Crestline & Northwestern.

This company filed its certificate of incorporation with the Secretary of State of Ohio May 15. The road is to extend from Crestline, O., to De Kalb, about 15 miles. The capital stock is to be \$50,000, and the incorporators are A. E. Jenner, William Pope, Jonathan Martin, Henry Wentz and John Adam Thomann.

Straitsville & Hooking Valley.

This road will extend from Shawnee, O., the southern terminus of the Straitsville Division of the Baltimore & Ohio, south to Mineral City on the Marietta & Cincinnati road, a distance of about 20 miles. It will be an extension of the Straitsville Division.

Consolidation of the Eastern and Boston & Maine Railroads.

The Boston Advertiser, of May 9, says: "The Eastern and the Boston & Maine Railroad companies have agreed on the permissive bill to consolidate the two corporations, the Boston & Maine having agreed on condition that the bill should be so modified as to allow only the consolidated corporation, instead of either of the corporations proposed to be consolidated, to

unite or consolidate with any or all of the roads between Portland and Halifax. The counsel of the Boston & Maine road said at the hearing yesterday that while the directors would not oppose the bill, it should not be understood that they favored consolidation."

Land Grants in Michigan.

The following statement of the land granted by the General and State Governments to different railroad companies in Michigan is from a report made by the State Land Commissioner:

COMPANIES.	Grant by	
	Government.	State Swamp Land Grant.
	Acres, 100ths.	Acres, 100ths.
Amboy, Lansing & Traverse Bay.....	716,372.10
Grand Rapids & Indiana.....	841,573.22
Bay de Noquet & Marquette.....	236,693.99
Marquette & Ontonagon.....	286,976.22
Chicago, St. Paul & Fond du Lac.....	329,767.81
Flint & Pere Marquette.....	511,618.28
Detroit & Milwaukee.....	31,138.75
Port Huron & Milwaukee.....	6,468.68
Chicago & Northwestern.....	110,700.73	143,083.75
Houghton & Ontonagon.....	77,984.05	17,130.23
Total.....	3,110,293.94	160,205.08
		3,270,499.90

Nashua & Acton.

The last rail on this road was laid about five miles below Nashua, N. H., May 7. The road extends from Nashua south to West Concord Junction, Mass., on the Fitchburg Railroad, and is about 24 miles long. In connection with the Fitchburg road it forms a line from Nashua to Boston 44 miles long, four miles longer than the present line by way of Lowell. The road is said to be very substantially built. The rolling stock is ready for use and trains will be put on the road at once.

Philadelphia & Reading.

Work has been commenced on an extensive addition to the company's office building in Philadelphia.

In the case of the Adams Express Company against the Philadelphia & Reading Railroad Company, the opinion delivered by the Court was as follows: "That the purpose of an injunction was to protect vested rights from injury and to prevent wrong; it was intended that a preliminary injunction should preserve matters as they were when it is sued, and not to undo what had already been done; and in order to claim the benefit of this remedy the party must show a clear interest in danger of being injured. If the defendants should attempt to exercise any franchise not conferred by the charter, it was for the express company to call them to account, for they had no interest or authority that would entitle them to question the defendants' acts, unless they were in direct conflict with the rights of plaintiff. I find that, possessing the right, the defendants seek to appropriate the profits of a business of which the express company had previously a monopoly, the defendants do not thereby incur a liability to the express company. Their relations to each other arise out of the defendants' character as common carriers, and the express company has a right to complain only of a refusal or failure to perform any of the duties required of them by law to the complainants as shippers. The transportation of freight has not, and cannot be, refused by them—and therefore they are not entitled to the relief prayed for."

A large force is now at work on the second track on the East Pennsylvania road between Allentown and Emaus. It is said that the Philadelphia & Reading Company intends to complete the second track on both the East Pennsylvania and Lebanon Valley roads, making a double track from Allentown to Harrisburg.

Springfield, Athol & Northeastern.

The grading on the extension from Barrett's to Springfield, Mass., is nearly completed, except in two or three places where there are heavy cuttings. The bridge work is being pushed forward, and track-laying will soon be commenced at Barrett's. The directors of the company have voted to accept the recent act of the Massachusetts Legislature authorizing the company to extend its road to Chicopee Falls and to bond the road to the amount of \$350,000.

Atlantic & Great Western.

It is said that this company intends to lay a third rail from the junction of the Shenango & Allegheny Valley road to Leavittsburg, the crossing of the main line and Mahoning Division. On from the Shenango & Allegheny Valley road can then be hauled to Cleveland without transfer. The distance from Shenango to Leavittsburg is 34 miles.

New York & Canada.

The contractors on this line, Messrs. Harris & Co., are pushing the work forward, having 2,400 men at work between Whitehall and Ticonderoga. Work on the tunnel at Ticonderoga was commenced March 24.

Georgia.

Steps are being taken to secure the extension of the Washington Branch of this road from Washington, Ga., north to Elberton, a distance of about 27 miles. Considerable stock has been subscribed for the extension.

Missouri, Kansas & Texas.

Work on the new extension from Denison, Tex., southwest, was commenced May 15. The first 15 miles is to be completed by August 15.

The Union depot at Denison, built by this company and the Houston & Texas Central, is nearly completed.

Cairo & Fulton.

The Attorney-General of the United States has given his opinion that the company has a right to build a bridge over the Arkansas at Little Rock under the original act of Congress donating lands in aid of the road. The bridge, however, must not obstruct navigation. Further, the company is not bound to file plans and specifications with the Secretary of War, as that is not required by the act.

New York Central & Hudson River.

The repair shops at Niagara Falls took fire on the night of May 19 and the carpenter, blacksmith and machine shops were destroyed, with a large quantity of seasoned lumber and four freight cars. The round house caught fire but was saved with only slight damage. The loss is estimated at \$100,000.

St. Louis & Keokuk.

A petition in bankruptcy has been filed against this company. The petitioner alleges that the company is bankrupt, and that it has transferred all its property to the St. Louis, Hannibal & Keokuk Company, with intent to evade the law.

West Jersey.

It is said that the gauge of the road is to be changed from 4 feet 10 inches to 4 feet 8½ inches very soon.

Kent County.

Work on the extension from Worton Station, Md., to deep water at Rock Hall, on Chesapeake Bay, has been commenced.

Canada Southern.

The work of ballasting has been much delayed by the weather, but is now progressing rapidly, all the available force being employed. The station houses along the line are being put up. At the Detroit River end of the line, the ferry slips on the Canadian and American shores are completed. The bridge

between Stony Island and Grosse Ile is completed and that from Grosse Ile to Trenton is completed, with the exception of the draw-span.

The large ferry-boat for the transfer across the main channel of the Detroit River was launched May 14. The boat is of wood and is a side-wheel steamer of 2,000 tons. Three tracks are laid on the deck, and 21 loaded freight cars can be carried at each trip. The boat was built by Messrs. Jenkins, of Windsor, Ontario, and the engine by the Delamater Iron Works, New York.

Meetings.

The Pacific Mail Steamship Company meets at Nos. 59 and 61 Wall street, New York, May 28, between 12 and 2.

The New York Central & Hudson River elects directors between noon and two p. m. June 4, in the Union Depot, Albany.

The Columbus, Chicago & Indiana Central elects 15 directors at Columbus, O., June 4, between 11 a. m. and 3 p. m.

The United New Jersey Railroad & Canal Company will elect directors at its office in Trenton at noon on the 27th.

Milwaukee & St. Paul.

Under date of May 15 this company issued the following circular to its stockholders:

"The opening of the new road between Milwaukee and Chicago, and extension of other lines of the company, having developed a large additional traffic, have made it necessary for the company to procure an increased amount of equipment, and to lay steel rails on the main lines; also to procure additional depot grounds and improve the same. To provide the necessary funds therefor, and also for the building of a bridge across the Mississippi River at La Crosse, the board of directors have resolved to issue \$2,500,000 of bonds, to be styled 'equipment and bridge bonds,' which are to be a first lien on the bridge and a second lien on the railways of the company, excepting the La Crosse and Prairie du Chien divisions, on which the new bonds will be a third lien. Said bonds are to be \$1,000 each, drawing 10 per cent. interest, payable semi-annually on the 1st of June and 1st of December; principal due June 1, 1883, the company having the option, on 90 days' notice, to pay the bond at any time after June 1, 1878; \$1,500,000 of said bonds are now offered to the common and preferred shareholders, at par and interest, in proportion to the amount of shares held by each, say one bond for every hundred shares of stock (inasmuch as some persons, especially trustees, will probably decline to subscribe). Payments may be made in one sum, or in monthly installments of 20 per cent. each. In all cases, interest will be reckoned at 10 per cent. per annum, being the same as the bonds.

"The directors reserve the right to close this offer at any time. Bonds will be ready for delivery June 1, 1873."

Mobile & Montgomery.

The President of this company has issued a circular explaining the reasons for the non-payment of the last half-yearly interest on the 8 per cent. gold bonds. The reduced rates forced upon the company since July 1 by State legislation have lessened the receipts of the road so much that the interest could not be paid from the earnings. The law, however, has been so amended that the rates can be increased about 25 per cent. A bill authorizing the lease of the road was passed by the Alabama Legislature last month, and negotiations are now in progress for its lease to responsible parties. This step is thought necessary in order to strengthen the road, in view of the probable construction of competing lines.

Northern Pacific.

This company announces that as soon as \$30,000,000 of its 7 3/4 per cent. bonds have been sold (about \$21,000,000 is reported already sold) that loan will be withdrawn, and publishes a resolution that future issues shall not bear more than 6 per cent. interest. This may indicate that the company does not purpose for some time to complete any more of its road than is now under contract (about 600 miles). Certainly it would seem good policy to make productive the parts of the road now completed, to which for a long period immigration must be chiefly limited, before extending it further into the wilderness.

Pittsburgh, Virginia & Charleston.

Regular trains are running to Dravosburg, Pa., opposite McKeesport, about 15 miles from Pittsburgh.

Meeting of Eastern Freight Agents.

A meeting of the general freight agents of the roads composing the "Connecticut River Line" was held in Springfield, Mass., May 21, and a new tariff adopted. It was agreed that cars of lumber should be billed at 20,000 pounds instead of 18,000. The next meeting will be in Boston, June 17. The roads represented were the New York, New Haven & Hartford, New London Northern, Connecticut River, Vermont Central and Connecticut & Passumpsic Rivers.

Lee & New Haven.

The bill extending until 1875 the grant of \$300,000 from the State, which had lapsed owing to the failure of the company to complete the road in the time allowed, lately passed the Massachusetts Legislature, but was vetoed by the Governor. An attempt made to pass the bill over the veto failed. The road will have to be built without State aid, if built at all.

Portland & Ogdensburg.

Work on this road is being pushed forward rapidly, and is so far advanced that the company hopes to make connections with the Boston, Concord & Montreal by next fall.

Worcester County Central.

Surveys are to be made for a line from Worcester, Mass., west through Spencer and North Brookfield to connect with the Massachusetts Central in Hardwick. The line will be about 24 miles long.

Eastern.

Preliminary surveys for the proposed new line for the Portland, Saco & Portsmouth Division have been completed. The new line leaves the present road at Kittery, Me., and runs to the southward of the old line, rejoining it at Kennebunk Station. The distance from Kittery to Kennebunk is about 20 miles by the new line, four miles less than by the present road.

Valley, of Virginia.

The Commissioners of Finance of the city of Baltimore have ordered the payment to this company of the first installment (30 per cent.) of the city subscription of \$1,000,000, the required conditions having been complied with. The road was before under contract from Harrisonburg, Va., southwestward 25 miles to Staunton; and since this order from the Baltimore authorities the contract has been let to MacMahon, Mason & Co., for the completion of the line, from Staunton southwestward about 90 miles to a junction with the Atlantic, Mississippi & Ohio Railroad at Salem, 60 miles west of Lynchburg. The Baltimore & Ohio already operates a branch from Harper's Ferry up the Shenandoah Valley to Strasburg, 51 miles; and the Washington City, Virginia Midland & Great Southern (late Orange, Alexandria & Manassas) has a line which forms a virtual extension 50 miles farther to Harrisonburg, which the road now under contract will complete to the lower valley. The whole line from Harper's Ferry to Salem will be about 220 miles long, through one of the most beautiful and fertile tracts in America, and one well settled and pretty well cultivated. The lower part of the valley is much the widest, and from Lexington to Salem it is quite narrow. The new part of the line will pass through or near Staunton, where it will cross the Chesapeake & Ohio, and Lexington, the site of the Washington and Lee University and the Virginia Military Institute. The latter place is reached by a branch of the James River Canal, which affords an outlet for the heavier products of that part of the valley. The new road will also pass very close to the famous Natural Bridge, and will for a large part of its length traverse a country likely to attract tourists.

This road must not be confounded with the Shenandoah Valley, a line which is being built up the valley through Charlottesville, Front Royal and Luray, under the control of Pennsylvania Railroad men, as the Valley road is controlled by the Baltimore & Ohio.

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Indiana & Illinois Central.

A correspondent informs us that the work of laying the track on the Western Division was completed May 16. The Western Division extends from the Wabash River at Montezuma, Ind., to Decatur, Ill., 85 miles. Of this 55 miles have been built since October last; 30 miles, across Douglas County, Ill., having been completed last summer. The whole road will be opened for business as soon as the filling and surfacing are done and the necessary side tracks laid. Connection is made with the Evansville, Terre Haute & Chicago road west of the Wabash. The new track laid since our last report is from the west line of Douglas County to Decatur, a distance of about 25 miles.

Lackawanna & Bloomsburg.

The Pittston (Pa.) Gazette says: "The Delaware & Hudson Canal Company no longer ships coal to Baltimore and other points south over this road, the contract for trackage having expired, and the trackage for coal has been secured for a term of years by the Pennsylvania Railroad Company."

New Jersey Southern.

This company has purchased the Arlington House property at Long Branch, N. J., and is fitting up the hotel and grounds for the use of excursion parties. A public hall, restaurant, retiring rooms and other conveniences will be provided.

The company has given notice to the New York Stock Exchange of its intention to issue 10,000 additional shares of the capital stock of the company, of the par value of \$100 each. The proceeds of these shares are to be used "for the purchase of boats for a ferry across the Delaware River; of a controlling interest in certain railroads in Maryland and Delaware; for the building of thirty miles of new railroad; for the building of slips and wharves on the Delaware and Chesapeake Bays, and other matters connected with the formation of a new through line between the cities of Baltimore and New York."

The transfer books will be closed from June 2 to June 10.

The present capital stock is \$4,000,000, which will be increased to \$5,000,000 by the new issue.

Texas Railroad Projects.

The following are among the railroad projects before the Texas Legislature:

The Pacific & Great Eastern Company asks a charter and 16 sections of land per mile for a railroad from Denison to Presidio del Norte on the Rio Grande, a distance of some 550 miles.

The Paris, Greenville & Cleburne Company asks a charter for a railroad from Paris southwest through Greenville and Dallas to Cleburne, a distance of 150 miles.

The Beaumont, Corsicana & Fort Worth Company proposes to build a railroad from Beaumont northwest through Corsicana to Fort Worth, a distance of 280 miles. Beaumont is on the Neches River about 25 miles from Sabine Pass. This charter has passed the Legislature.

New York, Providence & Boston.

Notice has been given to the stockholders that they will have the privilege of subscribing to new stock of the company at par, in the proportion of 32 per cent. of the number of shares which shall be registered in their names July 1, 1873. All subscriptions must be made between July 1 and July 15. All fractions will be retained by the company, and the shares derived from such fractions, together with any which are not subscribed for, will be sold at public auction. Any premium realized from such sale will be divided between the parties in interest, *pro rata*. The shares are to be paid for as follows: 20 per cent. on or before July 15, and 80 per cent. October 1. Full paid certificates will be issued October 10. The new stock will be entitled only to the dividends declared after October. The privilege of subscribing may be transferred.

The road extends from Providence, R. I., to Groton, Conn., 62 1/2 miles, with a branch to Wickford, R. I., 3 1/2 miles long, making 66 miles in all. By the last report, the capital stock was \$2,000,000, making the new issue \$640,000. The bonded debt was \$1,099,000. The dividends last year were at the rate of 8 per cent.

Bangor & Piscataquis.

The stockholders of this company met at Bangor, Me., May 14, and voted to ratify the proposed lease of the road to the European & North American Company. The road extends from Oldtown, Me. (on the European and North American road, 12 1/2 miles north of Bangor), west to Guilford, 45 1/2 miles.

New York Western.

Articles of consolidation of the North American, New York Western and Port Wayne & Pacific Railroad companies, under the title of the New York Western Railway Company, were filed with the Secretary of State of Indiana May 21. The capital stock of the company is to be \$50,000,000, and its road is to extend from New York City to Council Bluffs, Ia.

Central Pacific.

A large force is at work on the new loop line from Santa's, by way of Antioch, to Oakland, Cal. The only heavy work on the line is between Martinez and Point Pinole, where two short tunnels and a cut about a mile long will be required. It is said that the company intends to complete the line this year.

Arkansas Central.

On the extension of this road to Pine Bluff about 50 miles is graded, and the remaining 20 miles is to be finished in two months. The contractors are O'Malley & Arnold, of Memphis, Tenn.

Castine & Ellsworth.

The town of Castine, Me., has voted to lend its credit to the company, to the amount of 15 per cent. of its valuation, on condition that the town is made the western terminus of the road.

St. Joseph Bridge.

Col. E. D. Mason, Chief Engineer, informs us that the first locomotive passed over the bridge across the Missouri River at St. Joseph, Mo., May 20, and the bridge was immediately thereafter opened to railroad traffic. The flooring and sidewalks will be completed in a few days. The draw can be readily moved by one man, although a steam engine is in place and will generally supply the motive power. A celebration in honor of the completion of the bridge will be held May 31.

South Branch.

Ground was first broken for the construction of this road May 22, and a large force will be at work within a week. The contracts now let are from the Baltimore & Ohio road at Green Spring Run, W. Va., southward up the valley of the South Branch of the Potomac to Romney, 16 miles. The company hopes to have 25 miles additional, from Romney to Moorefield, under contract before long. Col. Robert White, of Romney, is

President of the company, and P. P. Dandridge, Chief Engineer. The road is to be of three feet gauge.

Massachusetts Central.

It is said that all the work remaining to be done on this road between Amherst, Mass., and Northampton can be completed in two months, and between Belchertown and Northampton in four. Therefore but little work will be done on the road until the bridge over the Connecticut at Northampton is nearly completed, when a large force will be put on and the work pushed through rapidly.

Postal Car Service in the United States.

The following statistics from official sources are published by an exchange:

The extent to which this service has since increased may best be judged from the following facts compiled from the Postmaster-General's report for 1872. During the year there were in successful operation fifty-seven lines of railway post offices, the routes of which extended, in the aggregate, over 14,117 miles, and employed a force of 649 clerks. Since then the number of lines, miles and clerks have been increased. The aggregate number of miles upon which service is at present performed is about 33,690 miles a day, or annually a distance of 12,296,850 miles run.

To those who desire a more detailed statement of the routes upon which this service is performed, and the increase during the last year, the following table will be found of interest:

Railway Post Offices in the United States June 30, 1873, with Table showing Increase in the Service since June 30, 1871.

Terminal Points.	Miles of route.	Miles of service.	Times daily service each way.
Atlanta, Ga., to Chattanooga, Tenn.	140	280	1
Albany, N. Y., to Buffalo, N. Y.	298	1,192	2
Atlanta, Ga., to Augusta, Ga.	171	312	1
Bangor, Me., to Vanceborough, Me.	112	236	1
Boston, Mass., to St. Albans, Vt.	230	580	1
Boston, Mass., to Bangor, Me.	249	996	2
Boston, Mass., to Albany, N. Y.	300	800	2
Boston, Mass., to Lowell, Mass.	192	241	1
Boston, Mass., to South Berwick, Me.	74	148	1
Boston, Mass., to Fitchburg, Mass.	50	100	1
Baltimore, Md., to Canandaigua, N. Y.	325	650	1
Bloomington, Ill., to Centralia, Ill.	126	252	1
Bloomington, Ill., to St. Louis, Mo.	180	360	1
Bristol, Tenn., to Chattanooga, Tenn.	242	484	1
Burlington, Iowa, to Council Bluffs, Iowa.	301	582	1
Centralia, Ill., to Cedar Rapids, Iowa.	219	438	1
Chicago, Ill., to Green Bay, Wis.	242	484	1
Chicago, Ill., to Quincy, Ill.	263	526	1
Chicago, Ill., to Danville, Ill.	188	376	1
Chicago, Ill., to Iowa City, Iowa.	247	494	1
Chicago, Ill., to Centralia, Ill.	258	516	1
Chicago, Ill., to St. Louis, Mo.	280	560	1
Chicago, Ill., to Toledo, Ohio.	243	486	2
Centralia, Ill., to Cairo, Ill.	112	224	1
Columbus, Ky. (to river), to Cairo, Ill.	21	42	1
Clinton, Iowa, to Council Bluffs, Iowa.	350	700	1
Cincinnati, Ohio, to St. Louis, Mo.	340	680	1
Cleveland, Ohio, to Indianapolis, Ind.	282	564	1
Dubuque, Iowa, to Fort Dodge, Iowa.	214	428	1
Davenport, Iowa, to Council Bluffs.	307	614	1
Detroit, Mich., to Chicago, Ill.	254	508	1
Freeport, Ill., to Bloomington, Ill.	180	360	1
Hornellsville, N. Y., to Dunkirk, N. Y.	128	256	1
Humboldt, Tenn., to Jackson, Miss.	276	552	1
Indianapolis, Ind., to St. Louis, Mo.	281	562	1
Kansas City, Mo., to Council Bluffs.	200	400	1
Louisville, Ky., to Nashville, Tenn.	185	370	1
Lafayette, Ind., to Quincy, Ill.	273	546	1
Lynchburg, Va., to Bristol, Tenn.	208	416	1
Memphis, Tenn., to Chattanooga.	310	620	1
Milwaukee, Wis., to St. Paul, Minn.	324	648	1
New York, N. Y., to Boston, Mass.	234	468	2
New York, N. Y., to Washington, D. C.	232	464	2
New York, N. Y., to Buffalo, N. Y.	422	844	2
New York, N. Y., to Albany, N. Y.	144	288	2
Omaha, Neb., to Ogden, Utah.	1,032	2,064	1
Philadelphia, Pa., to Pittsburgh, Pa.	358	716	1
Peoria, Ill., to Burlington, Iowa.	96	192	1
Quincy, Ill., to Kansas City, Mo.	324	648	1
Rochester, N. Y., to Niagara Falls, N. Y.	77	154	1
St. Louis, Mo., to Atchison, Kan.	330	660	1
San Francisco, Cal., to Ogden, Utah.	881	1,762	1
Toledo, Ohio, to Lafayette, Ind.	203	406	1
Toledo, Ohio, to Buffalo, N. Y.	295	590	2
Toledo, Ohio, to Elkhart, Ind.	139	278	2
Washington, D. C., to Weiden, N. C.	216	432	1
Washington, D. C., to Lynchburg, Va.	178	356	1

*Included in New York, N. Y., to Buffalo, N. Y.

The increase of miles of service from June 30, 1871, to June 30, 1873, was as follows:

Bangor, Me., to Vanceborough, Me.	236
Boston, Mass., to Bangor, Me.	552
Baltimore, Md., to Canandaigua, N. Y.	650
Burlington, Iowa, to Council Bluffs, Iowa.	162
Humboldt, Tenn., to Jackson, Miss.	552
Lynchburg, Va., to Bristol, Tenn.	406
Milwaukee, Wis., to St. Paul, Minn.	648
Quincy, Ill., to Kansas City, Mo.	648
St. Louis, Mo., to Atchison, Kan.	660
San Francisco, Cal., to Ogden, Utah.	1,762
Washington, D. C., to Lynchburg, Va.	356

The increase in lines of railway post offices from June 30, 1871, to June 30, 1873, was one each between Bangor, Me., and Vanceborough, Me.; Baltimore, Md., and Canandaigua, N. Y.; Humboldt, Tenn., and Jackson, Miss.; Lynchburg, Va., and Bristol, Tenn.; Milwaukee, Wis., and St. Paul, Minn.; St. Louis, Mo., and Atchison, Kan.; San Francisco, Cal., and Ogden, Utah; and Washington, D. C., and Lynchburg, Va.

RECAPITULATION AND COMPARATIVE STATEMENT OF THE SERVICE OF JUNE 30, 1871, AND JUNE 30, 1873, SHOWING THE INCREASE.

	June 30, 1871.	June 30, 1873.	Increase.
Number of miles of railway post office	40	57	9
Aggregate number of miles of the above	11,308	14,117	2,809
Number of miles of actual service performed daily	27,596	33,690	6,094
Number of miles of actual service performed annually	10,072,540	12,296,850	2,224,310
Number of head clerks at \$1,400 per annum	312	267	55
Number of clerks at \$1,300 per annum	258	329	71
Number of assistant clerks at \$1,000 per annum	43	53	10
Making the total number of clerks	513	649	136
With annual compensation amounting to	\$549,400 00	\$821,600 00	\$272,200 00